1957

THE SENATE OF CANADA

PROCEEDINGS

OF THE

SPECIAL COMMITTEE ON

LAND USE IN CANADA

No. 1

THURSDAY, FEBRUARY 14, 1957

The Honourable C. G. Power, Chairman

WITNESSES

Dr. A. Leahey, Field Husbandry Division, (Soil Survey), Dept. of Agriculture.

Dean A. M. Shaw, Chairman, Agricultural Prices Support Board, Dept. of Agriculture.

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

85798—1

SPECIAL COMMITTEE ON LAND USE IN CANADA

The Honourable C. G. Power, Chairman

The Honourable Senators

Barbour	Horner	Stambaugh
Basha	Inman	Taylor (*Norfolk*)
Boucher	Leger	Taylor (*Westmorland*)
Bois	Leonard	Tremblay
Bradette	McDonald	Turgeon
Cameron	McGrand	Vaillancourt
Crerar	Molson	Wall
Golding	Petten	
Hawkins	Smith (*Kamloops*)	

26 Members Quorum 7

ORDER OF REFERENCE

Extract from the Minutes of the Proceedings of the Senate

WEDNESDAY, January 30, 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, Golding, Hawkins, Horner, Inman, Leger, Leonard, McDonald, McGrand, Molson, Petten, Power, Smith (*Kamloops*), Stambaugh, Taylor (*Norfolk*), Taylor (*Westmorland*), Tremblay, Turgeon, Vaillancourt and Wall;

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.

85798—1½

MINUTES OF PROCEEDINGS

THURSDAY, February 14, 1957.

Pursuant to adjournment and notice the Special Committee on Land Use in Canada met this day at 9.30 a.m.

Present: The Honourable Senators: Power, *Chairman*; Barbour, Basha, Boucher, Bois, Bradette, Cameron, Crerar, Golding, Hawkins, Horner, Inman, Leger, McGrand, Molson, Smith (*Kamloops*), Stambaugh, Taylor (*Norfolk*), Taylor, (*Westmorland*), Turgeon and Vaillancourt.—21.

In attendance: the official reporters of the Senate.

The following representatives of the Department of Agriculture were heard:—

Dr. A. Leahey, Field Husbandry Division, (Soil Survey).

Dean A. M. Shaw, Chairman, Agricultural Prices Support Board.

The following maps were tabled by Dr. Leahey:—

Areas Covered by Systematic Reconnaissance Soil Survey.

Soil Map of Soulanges and Vaudreuil Counties.

Soil Map of Areas Developed under Grass, Forest, etc.

At 11.50 a.m. the Committee adjourned until Thursday next, February 21st, 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, February 14, 1957.

The Special Committee on land use in Canada met this day at 9.30 a.m.

Senator POWER in the Chair.

The CHAIRMAN: The committee will come to order. The first witness was to be Dean Shaw. Apparently he has not arrived yet; but since the committee, I know, is very anxious to proceed we have Dr. Leahey, who has been in charge of soil surveys in Canada for the Department of Agriculture, and I would ask him to be the first witness and give us a general view of what has been done in the way of soil survey in Canada.

Dr. A. Leahey, of the Field Husbandry Division (Soil Survey), Department of Agriculture, then came forward.

The CHAIRMAN: Dr. Leahey, what is your occupation at the present moment?

Dr. LEAHEY: I am in charge of the federal effort in soil surveys across Canada.

The CHAIRMAN: What is your educational background?

Dr. LEAHEY: I was raised on a farm in western Canada. I went to the University of Alberta and then to the University of Wisconsin. I worked with the University of Alberta. I have been connected with Experimental Farms for twenty years.

The CHAIRMAN: And how long have you been working on this particular work that you are doing now, soil survey?

Dr. LEAHEY: About thirty years.

The CHAIRMAN: Can you tell us in a very broad way what has been done in the way of soil survey in Canada up to the present by the dominion Government?

Dr. LEAHEY: Well, soil surveys in Canada started in the western provinces about 1921. It was not until about 1935 that the federal Government participated in a very active manner. Most of the work has been done since 1935; and the work between the federal Government, the provincial Governments and the colleges is tied so closely together that you cannot separate what one has done from the other; so when we speak about the soil survey work in Canada we are thinking about the joint efforts of the provincial Governments, the federal Government and the colleges. We have it organized so that there is just one soil survey organization in each province, which is usually under the direction of the professor of soils at the college.

The CHAIRMAN: Perhaps I should have asked you first, if only for my own information, just what is a soil survey?

Dr. LEAHEY: Basically it is an inventory of our soils. Of course it can be carried out on various scales. We do the work by making traverses across the country, examining and studying the different kinds of soils, showing their location on maps, and then describing the soils and trying to rate them as far as their agricultural worth is concerned.

Senator HORNER: How many of the provinces have a complete soil survey at the present time?

Dr. LEAHEY: Prince Edward Island.

Senator HORNER: That is the only one?

Dr. LEAHEY: That is the only one.

Senator HORNER: Has not Saskatchewan a full soil survey?

Dr. LEAHEY: We have not finished in the north part of Saskatchewan, in the unsettled areas.

Senator HORNER: But as far as the settled areas, it is pretty well completed?

Dr. LEAHEY: Yes, it has been completed, by a broad survey.

Senator CRERAR: Mr. Chairman, just as a matter of procedure—because we have had some problem in this respect in other committees before—is the witness to be allowed to go on and tell his story while members make notes of the questions they wish to ask him later, or is he to be interrupted by members asking questions as he proceeds?

The CHAIRMAN: As a matter of personal opinion I would think in a matter of this kind, which is not very controversial and wherein we wish to elicit information, it would be just as well to allow the members of the committee to ask questions as we proceed. Is that the opinion of the committee?

Hon. SENATORS: Agreed.

Senator BRADETTE: The witness before us may object to such a procedure. Although he is not making a speech he may wish to put forward in an uninterrupted fashion what he wants to say.

The CHAIRMAN: Don't you think that should be left to the discretion of the committee?

Senator HORNER: On the other hand, it might help the witnesses to interrupt and ask them questions. It will certainly enable us to find out what we want to know.

The CHAIRMAN: As far as I am concerned there is nothing that will discourage this committee more than having people come here and reading long briefs, particularly if we have been given copies of the briefs in advance and are able to reach the conclusions before the witnesses are halfway through the reading of the briefs. Nothing would make us lose interest more than that. Let us try to avoid having lengthy briefs on a complicated subject such as this. Does the committee agree?

Hon. SENATORS: Agreed.

Senator BARBOUR: Since a complete survey has been made of Prince Edward Island, I should like to ask what percentage of the farm land should be farmed, in your opinion? What percentage of the land that has been cleared should be left for farming purposes?

Dr. LEAHEY: We figure a fairly high percentage can be farmed.

Senator CRERAR: The witness has stated that the provinces carry on soil surveys and that the federal Department of Agriculture also carries on soil surveys. Is there any overlapping in that work?

Dr. LEAHEY: No sir, we work together under one joint direction at the provincial level. Take Alberta, for example. The Professor of Soils at the university is the director of the survey, and we have five men working there and the province has five men. They are all working in the same office and in the same laboratories, and the work is planned so that there is no overlapping.

Senator CRERAR: Is there ever any conflict in jurisdiction or in carrying on the work?

Dr. LEAHEY: Just the normal disputes as to how we should do the work, but probably there are just as many arguments between people in one service as there are between the people working in the different services.

Senator CRERAR: Are we to assume that you finally reach a joint conclusion after a discussion as to how you should proceed?

Dr. LEAHEY: Yes, sir.

The CHAIRMAN: Have you maps or plans showing what has been done across Canada in the way of soil surveys?

Dr. LEAHEY: Yes.

Senator CAMERON: I may say that this committee is making an auspicious beginning having Dr. Leahey as its first witness, for I have known him for the past thirty years as a practical farmer and as a colleague in the university. He knows more about soils in Canada than anyone you could get.

Senator HORNER: This witness will probably be familiar with that area in western Canada which was covered by what is called the Palliser Survey.

Dr. LEAHEY: We have different classes of soil surveys. We have the Palliser Survey, which we now call exploratory. It is almost in the same category of work that we are doing in the far north. The solid red blocks on this map show the areas for which we have published soil maps and reports. They are not all in the same detail. Some of them run a mile to the inch, but in southern Saskatchewan, for instance, the scale of map is six miles to one inch. I do not think you can see the red ticks but they represent places where we have done the work but have not yet published it. The red blocks represent 150 million acres.

Senator TURGEON: Is it purely a federal survey?

Dr. LEAHEY: No, jointly federal and provincial. We have 32 men afield, apart from the Ottawa headquarters staff, the provinces collectively have 22; they both hire summer assistance, but the province provides accommodation, offices, laboratories. The soil survey in Canada has been on fifty-fifty basis between the provinces and the Dominion government.

Senator GOLDING: Could you give us an explanation of just what you do in connection with this soil survey, and what you are trying to get at?

Dr. LEAHEY: What we are trying to get at is as to what kind of soils we have in the country, where they are and their extent. It is to provide a basis for anybody that wants to or has to use land.

Senator GOLDING: Now, some of the land you would designate for forest, and some for other things. Could you tell us something about that?

Dr. LEAHEY: Well, generally speaking, we may designate the land in a number of classes, such as Class 1, Class 2, Class 3, as well as giving a name to the soil. We may group several soils in each class, depending on their comparative suitability for producing crops.

The CHAIRMAN: The classes are based on suitability for agriculture?

Dr. LEAHEY: What we think according to their suitability based on our present knowledge.

Senator BRADETTE: Does the Forestry department use your maps?

Dr. LEAHEY: The Forestry people use our maps but sometimes don't like our interpretation as we confine our interpretation pretty well to agricultural usage.

Senator GOLDING: You say you have three or four classes; if you can, please tell us what those classes mean.

Dr. LEAHEY: There are two ways of rating. If you are only growing a few crops you can rate it good, fair or poor land—depending on whether there is a wheat yield over 20 bushels, or the land will produce over 10, and land that won't do that. When you have a variety of crops such as in the east you have to rate it for each crop; a land that might be excellent for oats might be useless for alfalfa. It is a little more complex when you have a great variety of crops. For example some soils in southern Ontario, which are unsuitable for most crops proved to be excellent for flue cured tobacco.

Senator HORNER: That red block in Alberta, is that in the Peace River area, the northern part?

Dr. LEAHEY: Yes.

Senator CAMERON: Mr. Chairman, could Dr. Leahey give a series of profiles? I think that would explain it as well as anything.

Dr. LEAHEY: I could some time. I have a generalized map of Canada on "Soils."

The CHAIRMAN: Would you put it up on the board, please?

Dr. LEAHEY: (Pins map on the board). Mr. Chairman, you can express your results in a great many levels. This is one attempt on the national level. Most of our work is at a county level. Then you go in to the farm level, depending on the detail required.

Senator TURGEON: Has the soil survey work you are discussing been carried on at the Peace River district of British Columbia?

Dr. LEAHEY: Yes.

Senator TURGEON: I do not see any red on the map, that is, the other one.

Dr. LEAHEY: There are a few red ticks.

Senator TURGEON: But it has been studied?

Dr. LEAHEY: But not published. This map shows what we think are the major divisions of soils in Canada each with their own set of soils, and own set of climatic conditions and problems as far as agriculture is concerned. There are three great breakdowns: the tundra soils, the forested regions, and the grass land soils—represented by this area in the west.

Senator HAWKINS: Which are the grass lands?

Dr. LEAHEY: The dark brown and the black soils.

The CHAIRMAN: And where else are they?

Dr. LEAHEY: They are scattered throughout British Columbia.

The CHAIRMAN: They do not seem to be in the east?

Dr. LEAHEY: No.

The CHAIRMAN: There is not what you call grass land soil in the east?

Dr. LEAHEY: No.

Senator TAYLOR (*Norfolk*): What would that colour indicate down in Ontario?

Dr. LEAHEY: They are the better kinds of forested soils.

Senator HAWKINS: Do you not usually find good agricultural land is good forestry land, or do you make a study of that?

Dr. LEAHEY: Not necessarily. We do not give much study to this matter.

Senator HAWKINS: Are your studies largely concerned to seek the farming potentiality of the soils, or the general use of soils?

Dr. LEAHEY: Well, both if we can.

Senator HAWKINS: How far do you go in both?

Dr. LEAHEY: Well, pretty well to the limit of our knowledge. We don't know too much about a lot of our soils yet; some of them have not been farmed for long, we have no experimental records, and have to judge entirely by the soil.

Senator HAWKINS: In any analysis you have to go by experiment, then?

Dr. LEAHEY: You can do quite a bit if you can correlate your analysis with past experience—past record.

Senator STAMBAUGH: Classes 1, 2 and 3 in Alberta might be entirely different from Ontario?

Dr. LEAHEY: Yes, they don't follow the same system of rating in the different provinces; even between Quebec and Ontario they don't.

Senator STAMBAUGH: But they are both agriculture?

Dr. LEAHEY: Yes, our rating is for agriculture. Our information is useful from the forestry point of view, but has to be interpreted by the forestry men.

Senator CAMERON: Is it not true that the amount of rainfall determines the kind of soil you get?

Dr. LEAHEY: Yes, climate is a very important point, particularly rainfall. The kind of geological material we had to begin with is also very important. But generally speaking in Canada we have to realize that areas that have been developed under forest are not as good natural soils as our grass soils—they have had more leaching take place in them.

Senator STAMBAUGH: Will you repeat that, please?

Dr. LEAHEY: Our forestry soils are not as good as our grass land soils.

Senator HAWKINS: You say that is because of more leaching?

Dr. LEAHEY: Yes.

Senator HAWKINS: That is of course after the land has been denuded.

Dr. LEAHEY: No. In this area there has been more precipitation. One reason why this is grass land is because it was too dry for trees.

Senator HAWKINS: I can't quite agree with you on that. True, there is more leaching, but it is after the land has been denuded. But while it is a forest, the land is building up all the time, and that is what makes it so valuable as grass land. The leaching takes place after the country is denuded.

Dr. LEAHEY: That does not quite agree with our observations.

Senator STAMBAUGH: The reason there has been so much leaching in the forest is because of the rainfall.

Dr. LEAHEY: Yes.

Senator STAMBAUGH: If it was not for that we would have forests on grass lands.

Senator HORNER: In clearing land it very often happens that it is burned over in dry seasons. I know that in many cases much of the valuable top soil has been burned off in the clearing process. For instance, up here in Quebec the land was burned right down to the bare clay in the dry season. What the forests had formerly done for the soil was lost in the clearing process by reason of the good top soil being burned off.

Dr. LEAHEY: That appears to be inevitable. The top soil can be saved if one is extremely careful, but normally the organic matter is on top of the mineral soil and it will burn. On the grass land soils the organic matter is in

with the mineral soil and won't burn. We think that under our natural forests, except perhaps down in southern Ontario, the soils are not rich in natural fertility; they can of course be improved by man.

Senator CRERAR: In your examination of soils I presume your field men take samples of soil?

Dr. LEAHEY: Yes sir.

Senator CRERAR: Do they analyse those samples and report on them?

Dr. LEAHEY: Yes.

Senator CRERAR: Is that the basis upon which you determine the value of soil?

Dr. LEAHEY: No sir.

Senator CRERAR: You determine it on its record of production in the past?

Dr. LEAHEY: Yes; in fact, we use anything we can to help us. We use record of performance, and that is tied in with what we call the morphology of the soil. We dig down three or four feet and study the various layers of soil, and gradually there is a body of opinion developed as to what certain things in the soil mean so far as production is concerned.

Senator CRERAR: I should like to get further information on that point. For example, out in the Prairie country when the settlers first settled there the soil was virgin and was rich. With continuous cropping the soil deteriorated in its productive power. Now when you examine a community like that where farming has become poor, and where the soil has been drained of its rich fertility, how do you test such soil, by its present productive power?

Dr. LEAHEY: By field and laboratory analysis, to determine whether you can bring that soil back quickly or cannot bring it back. For instance, two soils may produce ten bushels of wheat each, one can be brought back and the other cannot. It may be that erosion has taken place and a great part of the productive power of the soil has been washed away. We would take note of that.

Senator CRERAR: From my own observation the conclusion that I would draw is that the loss through erosion has not been very heavy. In a flat country you do not get much erosion, but nevertheless there has been a very distinct loss in the productive power of the land. What I am desirous of knowing is how you rate such soil when you examine it.

Dr. LEAHEY: We have to rate it as to what it could do under good management practice, not under poor management practice. In many places in this country all that is needed to bring soils back to their old productivity is perhaps 50 pounds of fertilizer, a little bit of phosphate.

Senator CRERAR: May I suggest that it also requires, probably, a different method of farming practice.

Dr. LEAHEY: Well, it is very hard to make general statements about soils in general because each behaves differently.

Senator CRERAR: For example, suppose you take a soil that has been cropped steadily without replenishment; it becomes powdery and blows. In our Manitoba experience that soil could be brought back to a very subsantial degree by the planting of leguminuous crops, sweet clover, alfalfas and so forth, which restore nitrogen to the soil. As a matter of fact, through that practice soil has been brought back to productivity in many districts in Manitoba. Now, if I understand you right your soil survey technique goes no further than reporting on the conditions of the soil as you find it in various localities? Do you pass on that information, or is there any method by which

the knowledge that you gather in this way is turned over to some other branch of the department so that it can be utilized to inform farmers what they would have to do to improve their soils?

Dr. LEAHEY: The first thing we do, say we are conducting investigations in the Red River Valley, and we have Red River clay. We will identify the soil, show the location of Red River clay, which is a particular type of soil. Now, some of those farms may be good farms, with high productivity, and some may be poor, but as long as it is Red River clay, that is how we rate that soil, as regards it productivity, and we won't rate it according to the poor farmers, we will rate it under good practical management conditions. But it is Red River clay.

Senator CRERAR: I think the point is rather important. Some soil may have deteriorated and you would rate it poor because for 25 or 30 years it was farmed improperly.

Dr. LEAHEY: That would be possible if the soil itself is a poor one.

Senator CRERAR: That would be possible?

Dr. LEAHEY: That would be quite possible.

Senator CRERAR: And you would rate that soil down to, say, third or fourth place as against other soil maybe a mile away which you would rate in first place.

Dr. LEAHEY: There would have to be distinctly two different kinds of soil before we did that.

Senator CRERAR: How do you determine whether they are similar soils?

Dr. LEAHEY: By examination, by digging into the soil.

Senator CRERAR: And by analysis?

Dr. LEAHEY: By analysis, after, but generally speaking it is just by digging in the soil and studying what we find. Then afterwards we begin to think about the interpretation of that soil, what it is useful for. It may have a lot of desirable characteristics on both farms, but one farm may be run down and the other not. In our interpretation, the vital thing is that here is an area and it all has the same kind of soil and there is no reason why any farmers in there could not do as well as the best one. But as far as our rating is concerned it is our judgment of the soil, the rating is not a fact, it is a judgment. The mapping, we hope, is a fact.

Senator CRERAR: What would you say are the chemical constituents in a good soil? I am not sure if I am using the word chemically in the right sense, but what are the elements—that is a better word—what are the important elements in soil required for high productivity?

Dr. LEAHEY: First, it has got to have a good rooting zone, the roots have to be able to permeate into the soil; it has got to have good water holding capacity; it has got to have good aeration. On the chemical side it must have a fairly good amount of organic matter, nitrogen, phosphate and potash, and not too acid. In other words it has to have enough lime in it that it keeps around neutral, not acid.

Senator CRERAR: Are there certain mineral constituents necessary for productivity?

Dr. LEAHEY: Yes, there are 13 or 14 chemical elements that must be in a soil to have plant growth.

Senator CRERAR: Can you briefly enumerate them for us?

Dr. LEAHEY: Nitrogen, phosphorus, potash, calcium, magnesium, iron, sulphur, maganese, boron, copper, zinc, and of course there is carbon and oxygen and hydrogen. Carbon comes from the air and oxygen and hydrogen

come from water but the others are from the soil. But as far as fertilizers are concerned we think of what are known as the big three, nitrogen, phosphorus and potash.

Senator CRERAR: Has your experience been that where soil is cropped continuously that these elements that you have just enumerated occur less and less in the soil and finally disappear?

Dr. LEAHEY: Yes, the amounts of these elements can become less but seldom disappear entirely. The crops would begin to go downhill and the farmer would grow smaller crops. Phosphorus in the soil is generally a very small amount and it is difficult to pick up by chemical analysis any change in its level.

Senator HORNER: Many of the soils on the prairies, Regina clay, Rosetown soil and so on, have shown no deterioration in 50 years of cultivation, provided it gets a rainfall. The yield from those soils are just as high as they were when it was first broken from the natural prairie.

Dr. LEAHEY: Those are tough clay soils that do last a long while.

Senator HORNER: Provided proper farming methods are used?

Dr. LEAHEY: Provided we do not let them blow away or wash away.

Senator HORNER: Of course that is a problem; but some of the real heavy soils, even after blowing, will still produce, while some of the lighter soils, of course, after windstorms were left in a useless state. So although the heavier soils lost something with blowing, they came back again and produced as large crops as ever.

Dr. LEAHEY: We did some work in the Regina substation which indicated that the loss of three inches of surface by blowing did reduce the yield by about three bushels. It did have an effect, but not the disastrous effect it has on the sandy soils.

The CHAIRMAN: We seem to be getting into a technical discussion.

Senator STAMBAUGH: You mentioned fertilizer. I would like to ask if the use of commercial fertilizer such as they manufacture at Trail adds to the fertility, or simply takes more fertility from the soil, — just gives it a shot in the arm.

Dr. LEAHEY: It adds as far as those elements which you apply, but by reason of bigger crops you will take more elements out of the soil which you do not apply.

Senator STAMBAUGH: Phosphate?

Dr. LEAHEY: No. Actually there is a build-up in the phosphate. You actually add more phosphates than you take out.

Senator STAMBAUGH: It adds to the fertility, does it?

Dr. LEAHEY: It adds to the content of the phosphate. I won't say it adds to the fertility. It is a very complex subject, depending on many things.

Senator STAMBAUGH: Do you recommend the use of it over a long term?

Dr. LEAHEY: It all depends on circumstances. We have records of high yields elsewhere where lands have maintained those high yields for a hundred years or more, and it has been entirely on the basis of very large amounts of fertilizer.

The CHAIRMAN: May I ask you — to get away from the technical details — what use is made of this service by the general public? What is done after you have analyzed the soil, made your maps, and so on?

Dr. LEAHEY: They are used, though perhaps not as extensively as they could be, by people locating land, people who want to change their land, and largely, I think, by agricultural advisers to farmers, the county agents who advise the farmers on farm practices.

Senator HORNER: And also they are used by the loan companies, and certainly, looking over a soil survey of Saskatchewan, a person can sit down and buy land and know exactly what he is getting. That survey is very thorough. Some land which they have classed as poor I know that people are farming, apparently quite successfully, not realizing that they have not the subsoil which exists in other places. But that survey is very useful to loan companies. It saves them a great deal of expense in going out and testing the fertility of the soil, and so on. They can have the survey map before them. So can a person purchasing land: You can very well buy it by checking on the survey.

Senator CAMERON: I wonder if Dr. Leahey could supply a number of copies of the soil survey bulletin to the committee?

Dr. LEAHEY: I just brought one, which is the Vaudreuil-Soulanges county in Quebec. It is a map on the county level.

The CHAIRMAN: I think we could file it.

Senator MOLSON: Just before Dr. Leahey does that, could he just run over this general map and say what the large blocks represent on his survey.

Dr. LEAHEY: In the far north is the tundra.

Senator MOLSON: What does the yellow indicate? Tundra?

Dr. LEAHEY: The yellow is an area that has permafrost, but it is covered with trees. It has frozen subsoils throughout the year. It gives rise to a particular kind of soil.

Senator MOLSON: The trees are not very tall, as a rule? That is jack pine?

Dr. LEAHEY: Mostly black spruce and white birch. At the southern end it will thaw to 20 or 30 inches.

Senator HORNER: Peat is really a great protection to keep down frost. That is true of the great Carrot river valley, which has grown immense crops of grain down near the Carrot river. It was covered with three or four feet of peat, and in some seasons it was practically a permafrost area; they could not drive posts at any time of the year. The fires came and burnt that whole three feet off; there was bush on it; and they could gather the bush up with horse rakes, and the quarter sections were left in squares like this table. Even old and experienced farmers were doubtful whether that land would produce after this fire. Roots would go down to the permanent water level. At first farmers dug wells in the basements of their houses and got water at 10 or 12 feet. But that land has been immensely productive; it has yielded 125 bushels of oats; and in some cases after that fire they went on with a drill without any cultivation whatever, drove on there with a drill, and grew as much as 100 bushels to the acre. Some of this land which is now permafrost, in the course of time, if it is bushed over and burned, a similar thing might take place.

Dr. LEAHEY: That is quite possible, sir.

Senator BRADETTE: It would take a long time.

Dr. LEAHEY: There is pretty good soil under that peat in the Carrot river valley.

The CHAIRMAN: What is the next one down, the green patch?

Dr. LEAHEY: This is part of the pre-Cambrian shield, mostly forest, and the only really good areas are those pockets like St. John and Kapuskasing. Generally speaking this region is non-agricultural on account of the rocky

outcrop and sandy nature of soil. This area in darker green is in the maritime provinces, a region of very acid soils. A lot of the soil can be made very productive, but it requires very good agricultural practice. Then there is the region of the St. Lawrence lowland, a region of poorly drained soils. The soils are good but they are wet. Most of these lands require drainage.

The CHAIRMAN: What region is that?

Dr. LEAHEY: From Ottawa east to the St. Lawrence and the Montreal plains. Another area is southern Ontario and probably its soils have the widest range for crops of any we have in Canada. Then there are the grass land soils in the West, and north of them are grey wooded soils. We estimate that over half the potential agricultural reserves that we have are in this region of grey wooded soils.

Senator MOLSON: It is presently forested but it is suitable for agriculture?

Dr. LEAHEY: Yes. In the Rocky Mountains region it is difficult to show the soils. Important soils do occur in this region but the areas are too small to be shown well on this map. Perhaps if I could show the other map it would illustrate the areas that are being farmed in Canada. The coloured areas in this map show the areas that are being used for agriculture in Canada today. This is a map which was made some years ago by the soil survey men to group our soils according to the amount of damage that had been done by soil erosion to date. It is a straight guess based on observations. This map does show the very limited area in relation to all of Canada that we are presently using. While we have other soils that we can use for agriculture, these are the cream of our soils that we are presently farming. We have no better soils back in the bush than we are using today.

The CHAIRMAN: Do you mean to say that these are the only places where agricultural cultivation has been carried out.

Dr. LEAHEY: Yes. We put in this colour in any area in which 10 per cent of the land has been cultivated and the rest is bush.

Senator BRADETTE: You seem to have missed the Lake St. John region north of the city of Quebec. Is that all there is there, just what is represented by that little circle?

Dr. LEAHEY: Yes.

The CHAIRMAN: You have a large proportion of New Brunswick in yellow there. Is that so?

Dr. LEAHEY: Most of that is actually still forested land. There are some settlements scattered through the bush.

The CHAIRMAN: I misunderstood you. I took the yellow spots to indicate localities that are farmed.

Dr. LEAHEY: The coloured areas represent the lands we use for agriculture.

Senator HORNER: Just looking at that map there it makes me think that by the time we get finished building jet airplane bases and industrial sights there will be scarcely any agricultural land left.

Dr. LEAHEY: The yellow areas have not been affected by erosion to any material extent as yet. The blue areas have been moderately affected, and the little red areas have been put out of cultivation but they are not very big in relation to the whole area.

The CHAIRMAN: What do you mean by "put out of cultivation"?

Dr. LEAHEY: They have been eroded so badly that they cannot be farmed.

Senator SMITH (*Kamloops*): What is the percentage of the total area of Canada which is fit or ever will be fit for agriculture?

Dr. LEAHEY: About 5½ or 6 per cent; about 10 per cent of the land within the provincial boundaries.

Senator CAMERON: I have heard soil men talk about 40 million acres of empty space. Does that refer to all the land that is potentially suitable for agriculture in Canada?

Dr. LEAHEY: The estimate is that our reserves total about 45 million acres.

The CHAIRMAN: By reserves you mean land that are as yet untouched?

Dr. LEAHEY: Yes.

SENATOR CAMERON: Would you state where they are?

Dr. LEAHEY: Well, there is some land in the Maritimes that could be farmed. There may be 5 million acres in the Maritimes that could be farmed in addition to what they are presently farming. There is quite a bit in northern Ontario and northern Quebec that could be developed, and there is quite a lot of land yet that can be used for agriculture in the northern parts of our western provinces and some in the Northwest Territories and the Yukon.

Senator STAMBAUGH: Is alkaline soil an acid soil?

Dr. LEAHEY: There are acid soils, neutral soils and alkaline soils. The ones we used to refer to as alkaline soils are now referred to as salty soils. There is quite a bit of that in the west.

Senator LEGER: How many acres would there be under cultivation in Canada at the present time?

Dr. LEAHEY: About 90 million acres, including quite a bit of land in pasture.

Senator BRADETTE: There are a lot of open spaces that will always remain open spaces. There is certainly a limit when you go northward. I know that 75 miles from my home town there are some trees but they will never grow any bigger. They are really only stumps.

Dr. LEAHEY: I would like to show you another map to illustrate what a county soil map looks like. These colours here represent different kinds of soils, some of which are extremely good and some extremely poor. This map illustrates perhaps the usefulness of soil survey information to indicate where drainage is required. With respect to this block of land to which I am now pointing, the only limiting factor is drainage. It is flat land poorly drained.

Senator HORNER: Drainage is of great assistance to the growth of timber in some areas, is it not?

Dr. LEAHEY: Yes.

Senator HORNER: Drainage assists the growth of timber.

Dr. LEAHEY: Yes. If the soil is too wet and remains cold, it is poor for growing conditions.

The CHAIRMAN: What county does that map represent?

Dr. LEAHEY: Vaudreuil and Soulanges in Quebec. Incidentally, in Quebec we issue maps in both the English and the French languages, and the reports are issued in both the English and French languages.

Senator CAMERON: Would you describe the types of soils indicated on that map?

Dr. LEAHEY: This is what we call the Ste. Rosalie area, which is a poorly drained soil. This one is Uplands (sand, a totally different soil) and they lie side by side. Of course, at a farm level there would be other variations, but this gives you a general picture.

Senator STAMBAUGH: Where is Ottawa on that map?

Dr. LEAHEY: These are the two counties of Quebec that lie in the St. Lawrence area.

Senator STAMBAUGH: These are both in Quebec?

Dr. LEAHEY: These are both in Quebec adjoining Ontario.

Senator CRERAR: What are the differences in the characteristics of the blue area, say, which is pretty good soil, and the yellow soil adjoining, which is pretty poor soil?

Dr. LEAHEY: This is the soil that has about 60 per cent more clay, perfectly level. This land is more rolling, and it is about 90 per cent sand; it is low in fertility, low in water holding capacity.

Senator CRERAR: What is the growth on sandy soil?

Dr. LEAHEY: That is usually bushes, and trees. Under natural conditions I believe it was under pine forest, but it has been very much disturbed. This clay area was under elms, I believe, before man arrived.

Senator CRERAR: Would sandy soil not grow forest there?

Dr. LEAHEY: Yes, but slowly; however, its best use is for forestry purposes.

Senator CRERAR: Jack pine and spruce.

Senator BRADETTE: You could not grow spruce there.

Dr. LEAHEY: Scotch pine would be one of the better trees on it.

Senator CRERAR: That would be a question for a forestry man.

Senator TAYLOR (*Westmorland*): What is the degree of completion of soil survey in New Brunswick and Nova Scotia?

Dr. LEAHEY: Most agricultural areas are mapped, sir; they are not all published yet.

Senator TAYLOR: Have you details in connection with the marsh areas?

Dr. LEAHEY: Yes; but not published. The information is in the hands of engineers working in the marsh areas. We only publish this more broad scale information owing to the cost of publication, chiefly, and the more detailed maps are not published.

The CHAIRMAN: Any further questions of Dr. Leahey? Thank you very much Dr. Leahey.

A. M. Shaw, Chairman, Agricultural Prices Support Board, Department of Agriculture.

The CHAIRMAN: Dean Shaw, you are now connected with the Department of Agriculture?

Dean SHAW: That is right.

The CHAIRMAN: What are your functions there?

Dean SHAW: At the moment, Chaiman of the Agricultrual Prices Support Board.

The CHAIRMAN: What has been your experience in Agriculture, generally?

Dean SHAW: I have been connected with it all my life actively engaged in farming until I graduated from the Ontario Agricultural College. For a number of years after graduation I worked in the United States, in Montana, Oregon, Washington, Idaho, and the Dakotas, in the employ of the Great Northern Railway. The president of that road the late James J. Hill was very much interested in agriculture and established farms throughout those States, along his railway lines and these demonstration stations were the immediate

work I had in hand, stocking them, and overseeing crop growing methods, and so on, for a number of years. During that time I imported livestock for those farms from Great Britian and from the Continent of Europe. In 1913 I went to the University of Saskatchewan as professor of Animal Husbandry, later became Dean of the College of Agriculture there, with general interest in all types of agriculture carried on in that province. During the time I was there the first soil map of the soil of Saskatchewan was completed. This was accomplished by the co-operation of the province, the university and the Experimental Farms Branch of the Federal Department of Agriculture. From there I became a Commissioner of the Canadian Wheat Board; with headquarters in Winnipeg, for several years. From there to Ottawa 20 years ago to become Director of the Marketing Service which was reorganized at that time on a new basis. Shortly after that, of course, the war broke out, and during that time I was direcly engaged in connection with food production problems and the supplying of Britain with food; had something to do with the food contracts, and accompanied Senator Crerar on one occasion to Britain in that capacity. Later I continued these activities as Director of Marketing Services endeavouring to develop suitable markets for Canadian commodities both in the domestic market and with a view to export as well. The latter of course was always under the Department of Trade and Commerce. Four or five years ago, I became Chairman of the Agricultural Support Board, and that brings us up to the present time. I might say I spent about 25 years in Western Canada located in the province of Saskatchewan, but was familiar with all the other western provinces, and since then I have become more familiar with the east, although born in the east, of course, in the first place. Is that sufficient, sir?

The CHAIRMAN: Yes. Could you give the committee some idea of the problem of land use as we are instructed to study it?

Dean SHAW: Well, since you invited me to appear before this committee I have endeavoured to give it some thought, but in the very beginning I must confess that this subject is so large and so diverse, and there is so much material, some of which you have already noted here, from all sorts of sources in connection with surveys and investigations, that it is impossible to really discuss it in complete detail in a short space of time. For that reason I felt that perhaps some comments would be in order in connection with what has been done in parts of Canada and perhaps elsewhere, and note what the aims and ambitions of a great many of these groups seem to be in connection with the conservation of natural resources. The study of the soil is one of them, along with other things. The terms "land use" and "conservation of natural resources" mean pretty much the same. They all boil down to reasonably good management of the commodity with which you are dealing. In this case it is natural resources.

Perhaps soil is the basic thing. Part of it is covered with trees, part has been scraped clean by glaciers, providing a rock surface; still other parts of it is under tunda or muskeg, some of which is frozen continuously a few feet or a few inches below the surface. Some of it, as in the western prairie sections, has been producing grasses and has never produced trees, at least not within the period in which it has been settled.

So, the problem varies in different parts of the country. In fact, that tremendous variation applies even to single farms of, say, 100 acres, where you may have two or three different kinds of soil. The variation goes on on a still wider scale over the whole of Canada.

In the literature one reads in connection with conservation of resources one almost always finds reference to what has happened elsewhere. Then, the moral is drawn that we are a young country and our resources have not yet reached emergency conditions. But many of the persons vitally interested

in studing these matters feel that something should be done. To me, that is perhaps the most important point in an investigation of this kind: What procedure or what action can be instituted in a democratic country to improve the management of our resources, and in that way to prolong their uses indefinitely? There are countries in which that has been done.

We might for a few moments think of what has happened in some of the countries of the Middle and Far East. For instance, China has the great Yellow River—and many of you may have seen it—which comes down from the highlands of Thibet. It flows through the plains and carries with it quantities of the yellowish soil, from which it gets its name. It is full of the yellow soil in solution much of the year. This it carries out into the Yellow Sea, which also derives its name from this fact. In the past floods have occurred frequently because the slopes have been denuded of timber or obstacles of any kind. Great rains and melting snow cause the turbulant flow through the tributaries into the Yellow River and thence into the Yellow Sea. Such a condition destroys the surface of the land in many places and frequently causes great loss of life because of hunger resulting from complete crop destruction. The people of that area have been farming for 3,000 or 4,000 years It has been said that this condition of erosion could have been prevented. I do not know whether or not it could, and I do not suppose anyone else really knows. However, we do know the condition that exists today.

We also know the condition which exists in some countries of the Middle East. For instance, the hills of Lebanon, which at one time were covered with big cedar trees, now have a few scraggly cedars on them. We know that the destruction of the trees started with King Solomon using them to build his temple. Today the people of that land are impoverished because of lack of agricultural production; and in the present economic condition in which they find themselves they can do nothing about replacing the forest or the soil.

If we look at India we find much the same problem, although somewhat different in form. In that country the people do things which we consider extremely strange. For instance, in one village with which I am familiar, a herd of common cattle, not the Brahmin type, of all ages and sizes, graze on common land. These cattle are owned collectively by the people of the village, and they graze daily on hilly land which was once timbered, but which today grows only poor grass, brush and scrub, and provides a little browse for the cattle. At night the cattle are brought into the village and locked in a walled corral. The only reason they are kept there is for their manure. They remain in the corral until about 8 o'clock in the morning and then are let out on the hills again. Their manure is carefully gathered and made into small bricks and put on the mud walls to dry. The interesting thing is, that this is the only fuel the village has. Their wood is all gone; they have no coal or oil.

Senator HORNER: And they have no gas.

Dean SHAW: No. They must have fuel, and so they have done what our western pioneers did when they burned what they called buffalo chips, or the dried manure of the buffalo for the camp fire. That situation in India seems to us strange. And yet the villagers are forced to do what they do; they have no other fuel, and their economic condition does not allow them to reforest the hills. So, they have a bare existence.

Senator HORNER: They make no other use of the cattle?

DEAN SHAW: No. Perhaps one or two of them may milk, but without the manure they would just throw up their hands. I just mention that because it is one of the strange circumstances we find all over the world to day. It is evidence of what has happened. To a thinking person, that situation should have been prevented. But it has become an economic problem. Once you cut down trees, which take 40 or 50 years to grow, you are immediately

handicapped, and you must move on to use the land from which you removed the trees for something else. All pioneer people do the same thing; it is done by force of necessity, and they do not think too deeply about it, until dire circumstances have crept up on them.

I came down to this part of the country about 20 years ago and now live some ten miles from Ottawa. While driving on the Aylmer road 20 years ago one would meet dozens of trucks hauling cord wood, elm, birch and maple, to Ottawa and Hull. This wood was cut from the Gatineau hills and farms as far up the Ottawa River as Shawville, on the Quebec side, and a similar distance on the Ontario side. Today one scarcely meets a truck hauling cord wood, because we burn oil generally throughout the country. However, one does see today trucks loaded with pulpwood, spruce and poplar, for the pulp mills and birch and elm logs being delivered to the veneer plant at Gatineau Point. Those farmers bringing that in are making daily decisions as to what are we going to do, we can get so many dollars a cord, or so many dollars a log, what will we do, will we cut down that bunch of trees and get that money or let them stand. That is an individual decision he is up against and the thing he will do usually is to cut them down, bring them in and get paid for them. They are on land that he owns and pays taxes on and not too many individual farmers who are on a piece of land, who make a living for themselves and their families are in a position to pick and choose what they sell, economic necessity forces such a decision.

Now, it is all right to give them instructions, to advise them, to put all the information on the table—that is essential and necessary, and extremely important—but even then when it is there, these men, the owners of the farms across this country are not by any means able to do it, although they would like to and know why it should be done. It seems to me that is one of the key points in connection with any conservation activity, you have to bring some pressure or some inducement of some kind to bear on the problem in order to get a start or to get interest worked up in connection with the problem itself, because I think most people will agree that this country could be denuded by soil erosion and improper use of resources and become almost the same as many of these other countries I have spoken about. It could happen here.

Senator CRERAR: What might happen there, may I ask, when the trees are all cut off that land? Is the soil such that they can then turn to farming it?

Dean SHAW: No, not all. Much of it is too rough and much is too light.

Senator CRERAR: Then they would have to move out?

Dean SHAW: Yes.

Up to now we have been dealing with the soil itself to some extent.

The question of water is wrapped up in the soil. Soil is of no use without water. Sometimes we have too much of it and sometimes not enough. In western Canada the problem of retaining water is the all important problem in the prairie sections, keeping it from running off, keeping from losing it. Great headway has been made in that sense. About 1935, since the Prairie Farm Rehabilitation Act came into operation, which has been directed by the late L. B. Thompson, and in the last 20 years there has been a vast improvement out there based on the conservation of water that formerly ran away into the coulees or into the streams or evaporated into the atmosphere and was thus lost for agriculture or livestock. Many schemes were worked out. I will not go into them in detail because I am not familiar with all the technical angles, not all of them, but I know what has been accomplished. They established thousands of watering places, simple dugouts on the prairie. The department furnished excavating draglines and the farmer furnished the labour, and between the two they dug a hole sometimes as big as this

room 9 feet or 10 feet in depth, all in a few hours. These dugouts were located at the foot of a prairie draw or field that slopes that way because, in the spring, when the snow is melting and the ground is frozen the water runs off very quickly. These dugouts will fill with water in one season and supply enough water every year so that the farmer has a water supply the year around. That was of tremendous importance to the prairie farmers. Some of them had to haul water for miles before that, because digging wells on the prairie is a very speculative business; it is only in some places that you can get water in sufficient quantities from a well.

Then, they built some small irrigation dams. I would like to mention specific places because I think it gives more information that talking about a whole survey. In the little town of Val Marie, in 1937, I distributed for the federal Government carloads of vegetables and food sent from eastern Canada to feed the people. Val Marie was only one of the places. You will remember that food was shipped west in 1937, that was one of the driest years. That little town had nothing, it had to be kept as it were. Their cattle were being sold in that year for one cent or a cent and a half a pound—a 1,000 pound cow brought $10. They got down so low in livestock that at the end of 1937, there were only 700 or 800 head there in the whole district because of lack of water and lack of feed. Then the Prairie Farm Rehabilitation Administration went to work and impounded some water on the Frenchman River and irrigated some thousands of acres of land. Today there are probably 3,500 head of cattle in that centre, all through that area; every one of those farmers is in good condition because they have been assured of winter feed (alfalfa hay) to feed their livestock which in the summertime can gain their food from the surrounding range.

That is briefly a statement of what the P.F.R.A. has been doing. Many, many larger projects than that were undertaken. Then their work in connection with soil drifting, the sowing of crops in strips at right angles to the prevailing winds was an improvement, the fact of leaving a strip of stubble and then a strip of grain tended to prevent soil drifting. The change in tillage methods also had a bearing on the control of wind erosion on the prairies. In 1923 to well into the thirties the wind began to blow harder than any of the settlers had experienced before in the spring of the year, and a little later the rains more or less ceased. The early 1930's were extremely dry and the surface of the land would move very quickly and easily and much of that land went out of production in those years. There are people who stated that this is land that is submarginal and should not be farmed. Well, that may be true from one angle, but some of those farms that were blown out completely at that time have produced 40 to 50 bushels of grain per acre since the rains came in the last ten years. So we see that moisture in that country is all important and must be conserved by some means.

In the east the opposite sometimes is the case. Dr. Leahey mentioned the fact that some of the best land in the area between here and Montreal is in that position. We have all seen it as we go by train from one city to the other. We see the flat fields on both sides of the road. One does not need to be a farmer to know that it is wet; the flood water is there, it takes a long time for it to run away, and by the time these people are able to sow their oats it often is pretty late, sometime in June. If it turns hot in the Ottawa valley in July and August, the crops fail to develop. The reason the season is so short is lack of drainage; the climate is all right, and so are the conditions other than that. That is the problem, and it is one which the individual farmer cannot manage on flat land extending over a very large area, because he just owns one unit, say in the centre of the block; where is he going to get his water to go? It requires municipal or some kind of other corporate action, the action of groups, to provide main outlets so that he may reach them with

lateral drains. Of course the next step is the under-drainage of that kind of land. It is a very good procedure if it can be done economically. In the province of Ontario they loan a farmer up to $2,000, I think, providing that represents 75 per cent of the expense of draining his land, and they will survey his farm. However, you can check that. But it shows the importance of these things, and what is being attempted.

The control of flood water is another angle, and that affects the urban dweller. The water comes down any river and floods a town or village at its mouth. These floods become more frequent as time goes on, and people within the town begin to say, "Why is this? This river never overflowed before. I have lived here 40 years and I never saw this river so high." On investigation it is found that water is getting into the river faster than it used to. Why? Because the land is bare around the tributaries, the head waters, the feeders, and it rushes in there at the spring thaw and gallops on down, and floods some city at the mouth. That raises a big problem. The United States authorities have done a tremendous amount of work in that regard with their Army Engineers, and it has been based on damming the streams. There are two schools of thought. One favours the big dam at the mouth; but since these have been installed, many of them have begun to silt up until they are almost useless. There is now another school of thought which holds that more small dams away back up the stream would be better. That, again, is taking note of what nature does. In the early days all the streams in Ontario, and many in Quebec and other eastern provinces were partly controlled by beavers. Any of you with a farm background know that a man who had a farm on an old beaver meadow had a good farm, because it was a silted area brought in by local flood water and as it was cleared off he had good land. At the same time he opened it up so that the water would flow off it more quickly into the river. But the theory of course is to some extent to replace that sort of thing with a number of dams here and there all the way up to the source, and in that way to control the flow so that it does not really get such a head on as it proceeds downstream.

I believe that there are now in Ontario, 12, 13 or 14 water authorities or groups set up to study and advise and recommend controls at certain watersheds, of which there are quite a number—the Garnaraska is one; the Grand River; Etobicoke—and that is being done. Democracy begins to move when it has to, when the situation becomes critical: When that time is reached of course a cure is applied. Now whether it is possible in a country like ours to provide, or at least consider and study what might be termed preventive action before things of this kind develop, is to me one of the key points, and one of the most difficult, for the simple reason that Canadian farm lands are deeded, individuals have title to them, their homes are on them in many, many cases, and they have control of their particular piece of property. So unless they are imbued with the idea of doing something about this condition, now, for posterity, unless they have that idea, they just don't do it. That perhaps is not their responsibility. I have heard people say that the farmer's responsibility to the rest of us is to keep his farm up to the very highest possible standard. Now that is his responsibility from his own standpoint, I would agree, but I am not too sure that if it is uneconomic for him, he can be expected to do it for somebody else's benefit.

Senator HORNER: You have mentioned heavy land which is wet in the spring. Some of it is peculiar in this way, that although it has been worked in the fall it has to be reworked after it has dried. Another condition which has added considerably to the lateness of seeding in recent years is the substitution of tractors for horses. The farmers have attempted with tractors to go on the land too early and the tractors get stuck in the mud, whereas horses would be able to seed the crop a week earlier.

Dean SHAW: Yes. You might, I think, gain about a week, by using horses.

Senator BARBOUR: Land such as the heavy land of which you have spoken between Montreal and Ottawa, wet land, would it not be better kept in grass or permanent pasture? Then the horses would not be in the mud so much.

Dean SHAW: Well, grass and permanent pasture under certain conditions are capable of producing considerable revenue, but not in all cases. The location of that land, adjacent to a big market like Montreal, and the quality of it, indicates that it probably could earn more if it could be cultivated and produce crops rather than remain under grass and pasture.

Senator BARBOUR: It would have to be drained to do that?

Dean SHAW: Yes, that is the point.

Senator HORNER: You mentioned the dugouts on the Prairies. Of course, there are a great many sections of the Prairies where it is impossible to do what you said. Unless the water level is there, the soil is not capable of holding it.

Dean SHAW: It is too porous, that is true.

Senator HAWKINS: Dean Shaw, in speaking about prevention of runoff in respect to water control, you mentioned the building of dams by beavers. It was not so much the beavers that controlled the runoff as the presence of the forest cover. These areas we are talking about where forest covers exist are largely owned by the provincial governments. I would like to hear you make some comments with respect to the maintenance of forest coverage on these lands.

Dean SHAW: Senator Hawkins, I did not mean to indicate that the beavers controlled the flow, but I think they assisted by making dams. There is no doubt that the forest cover kept the water there.

Senator HAWKINS: The forest cover kept the water in the soil.

Dean SHAW: Yes. Usually those soils are not too deep. They are in some cases but usually they are not, and the only way the trees can remain is to keep that cover that has developed by the growth of other trees, and so on. This problem has been tackled by the foresters and they will be able to speak with greater atuhority than I can on it, but from observation it seems clear that the removal of the trees, and the subsequent destruction of the undergrowth and the soil by fire, and so on, has tended to increase the runoff.

The snow melts much earlier in an open area than it does in the woods. In fact, snow will melt six weeks earlier in the open than it will in a bush. Snow will melt in ten days in the open whereas in heavy forested land it will take six weeks for the same amount of snow to melt. That is another reason that causes these runoffs.

Some honourable senators are familiar with the Nation River which is not far from Ottawa. That river causes tremendous trouble every year. It was timbered at one time and they started to settle the area and they cut the timber off and they have trouble now with the river flooding.

A great deal of money has been spent by municipal and provincial authorities and by individuals in protecting the lands along the Nation River. I would point out that there is a group which claims that much of the soil being farmed along this river, towards its mouth, was brought down by floods years and years ago before anybody was here. It was land that was brought in from above. From that argument some claim that this flooding has always prevailed more or less, but we have only had records of it from the time when settlers first moved into the area. We are prone to associate

the flooding with the actions of man, and I think probably man's actions have had a lot to do with the flooding because the floods are worse than they once were.

The reforestation problem is one that is of vital importance, for there is a great deal of land in Canada that will grow trees but is not suitable for agriculture. As a matter of fact, there is probably more land in this country that will grow trees than will produce crops. However, it now appears to have been a mistake to have cleared some of this land of its trees; but again I say that it could not have been helped. It would have happened and it probably ill happen again if conditions are duplicated.

Senator HORNER: Senator Hawkins mentioned the provincial governments and their deforestation methods. Take this modern method of taking timber out of our forests. They use huge caterpillar machines to drag whole trees out. They call it the herring bone method. They haul the trees out at an angle and the result is that all the young growth is destroyed. The method of hauling these huge trees at full length is a far different one than that employed by my father when he was conserving a valuable piece of bushland up the river here. You were not allowed into the bush if you destroyed a young tree in bringing out bigger ones. You certainly could not remove smaller trees to bring out the big ones. I have known of farmers taking their horses into woods and cutting pulpwood each year for fifty years. For instance, sometimes by thinning a bush you make it grow faster; but this modern method is very destructive in the case of young growth.

The CHAIRMAN: Dean Shaw, you were speaking about the effects of water and you got as far as the province of Quebec. Could you move on east and tell us something more about the troubles in that area?

Dean SHAW: The conditions are much the same in all eastern provinces.

Senator CRERAR: Before Dean Shaw continues I should like to ask him a question or two. I was very much interested in the illustration he gave of wood being hauled in when he was going out to his farm at Aylmer. Your view is, as I understand it, that when the wood disappears the farmers' means of sustenance will be largely gone and they will have to move away. What will happen to that land then?

Dean SHAW: I would not say that entirely, Senator Crerar. They would have lost that means of revenue, though.

Senator CRERAR: Is the land suitable for farming?

Dean SHAW: Oh yes, much of it is, and it still has a lot of grown trees. The Ottawa Valley is a natural area for growing elm trees.

Senator CRERAR: Will soil erosion result from cutting them down?

Dean SHAW: There could be but not unduly so. This is really the remnant of the forest, and they are cutting it down. That was my illustration. All the pine and other merchantable timber was removed long ago.

Senator BRADETTE: Most of it was burned down during terrific forest fires.

Dean SHAW: Yes, and now they are cutting down the birch and elm. What is left is the remnant of the forest. There is no more commercial wood available.

Going farther east in Quebec we find that the drainage problem extends all along the St. Lawrence River. You can see it. A person travelling through a countryside and watching what is going on with respect to land appearance can form a very accurate idea of the type of fundamental business that will be carried out in that locality. For instance, in certain times of the year in travelling from Montreal to Quebec you will find that the train passes

through miles and miles of flat land that is covered by water. It is obvious that the land is poorly drained, but nevertheless it is being farmed and used. It is really good land but it floods. That is one of the problems they have there, and what to do about it, I do not know.

Many of the river banks in Quebec and Ontario have been denuded of trees and have been cleared, and this has caused difficulties in the lower regions because of flooding. The province of Quebec has done a tremendous amount of work, especially in the direction of drainage, to remove the water from certain areas. But removing water from swamp areas, mucklands or low-lying districts is a difficult one. They have about forty or fifty drag lines furnished for this purpose. The Government has a lot of mechanical equipment to do this work, which all interested groups feel is necessary in order to improve and conserve the districts in which they are operating.

Now, it may happen that that can be overdone; I think it can, this drainage of water, because as settlements grow and urban populations increase, and so on, the question of water supply not only for household uses but for industrial uses becomes more and more important, and if the water table is lowered permanently, the water allowed to get away, this becomes a problem. Now you get this thing in reverse in some places.

In the State of Arizona their hills are bare, they always were bare relatively because that country has such a large rate of evaporation, and one of the reasons for loss is that the moisture, even though there is enough moisture falls, a very high percentage goes up in the air before it can be utilized, and the run off is terrific—flash floods descend and water will rush down the slopes and be lost. They are attempting there in some areas to conserve water for irrigation purposes underground. They have a peculiar formation there of gravel pockets in the soil which will hold water if the water can get into them, and there are at present many areas where they have dug wells which are used in reverse, viz; the water runs into the wells from the top and seeps into these great gravel pockets, they then pump it out and use it for irrigation. That is the opposite of what we think of as a well in this country.

Farther on down you get to the province of New Brunswick, and here again the conditions are not too different. Another thing one might note here is the forest change in variety of trees as you go eastward, and that is one of the outstanding things in connection with the imporance of a country for agriculture. What did it grow originally? What type of vegetation was originally there?

Now, mention was made by the previous speaker here that the province of Ontario, the southwestern part of Ontario, had some of the richest land, or land that perhaps would produce the greatest variety of crops, in an area of its size, in the whole of Canada. I think that is probably correct, and I think an observant man could tell that without knowing too much about the soil, by knowing what grew there in the beginning. If you go along that whole area, along the lake area, and north of that from Lake Ontario up to Lake St. Clair, all up through there in the early days, the forest along the Talbot Road and the Governor General's Road had all the nut trees that grew in this country, walnut, hickory, chestnut, the best maples in Canada, elm, and white and black ash, and oaks—they had them all. There is your story right there. Now, a lot of that has to do with climate—soil and climate go together. For instance, you can take and analyze a block of soil in the State of Iowa on which corn was produced at the rate of 100 bushels per acre, but if you have that same soil in the Carrot river valley in Saskatchewan you cannot grow that corn whatever you do. That is due to climate. Climate has a lot to do with all these things. Parts of Norfolk county, Ontario, which was once condemned as a sand bank, is a case in point. Some fellows got the

idea they could grow tobacco there and they started and made a tremendous success of it. Climate again, along with the soil; it cannot be eliminated, it has a lot to do with it.

Then the soil has another factor. Where do the cedars grow in Canada? Just on the limestone soils; and we have lots of it around here; but as you go east is disappears, and in the Maritimes and Newfoundland none will grow, or very few; it will grow if you plant it in a kind of a way, but it is not a native, and does not like it, and the reason is that the soil from here eastward is highly acid, and the cedar tree likes limestone soil, and they grow best around the Ottawa Valley, and Brockville, and up all through this country where there is lots of lime. The same applies to the elm, there are few elm trees in the far east of this country. Birch will grow all the way across, apparently pretty well, but some of these others will not. But where you get a very highly developed group of different types of plants and trees it is an indication that the combination of nutrients in the soil together with the climate is advantageous to the growth of those things, and usually that country can be developed more easily and to a higher state of development than most other places. There are certain factors that seem to prevent a thing growing at all, and the type of soil, as illustrated very clearly here by Dr. Leahey, that is, some soils can be used for certain purposes, and some are no use at all. From that standpoint they are marginal, but marginal soil is only marginal if it is used for the wrong purpose, that is about all. Briefly, a marginal soil is soil that is not so good as other soil for a certain purpose. As it goes down the scale it comes to a point where it is not economically possible to do much with it, and therefore it is on the margin, it on the line; but if it was reforested it might immediately become a very productive soil, because it is suited to that purpose, and would not be called a marginal soil at all.

Senator HORNER: Dean, you were going to develop timber growing in the Maritime provinces and what it would indicate.

Dean SHAW: Well, the type of timber in the Maritime provinces is largely the conifer—spruce and fir, and tamarack.

Senator HORNER: Birch, too?

Dean SHAW: And birch. Now, birch is the commonest hardwood in the forest mixed with conifers. There is some poplar, because poplar grows everywhere in places, but the conifer, the pulpwood tree, grows there in New Brunswick, Nova Scotia, and in Newfoundland, and in Labrador. But not the deciduous trees so much. Now, another reason I did not mention about that good area in western Canada was the fact that that was not a conifer country, that was not the best pine country in Ontario. Those are the hardwoods, some of the best oaks and ash and maples and the falling of the deciduous leaves annually over the years builds a soil that is immensely fertile, but the falling of needles from the conifers adds nothing.

Senator HORNER: Exactly.

Dean SHAW: They are different, and we have to face that right away.

Senator BRADETTE: Does the same apply to the falling of spruce needles as well?

Dean SHAW: Yes.

Senator BRADETTE: It would be acid, too?

Dean SHAW: Oh, yes, acid soil. They don't make them acid particularly, but the point is that if it was a deciduous tree it would change the acid eventually.

Senator HORNER: You did not mention tamarack.

Dean SHAW: No, I did not. You call it tamarack, but when you move to other places you fiind it is known by different names. Some call it tamarack, hackmatack, juniper or larch. It grows in low swampy areas, and is a very useful tree. But for reforestation I do not think it is of much importance. The more important is the spruce and fir.

The point I made about acidity is an important one. In the soils, not too far east of here, there is almost always a lacking of lime content; in other words, it is not a neutral soil. That condition can be corrected.

May I describe something I found to my surprise on my first visit to Nova Scotia many years ago. I was out on a farm where the land was being cleared of spruce timber, in preparation for seeding. The stump piles had been drawn off and some of them had been burned. I asked the farmer what he was going to do first, and he replied that he was going to lime it. To me that was an amazing thing, for I was born in this part of Ontario where the land is neutral, and where nobody ever heard of doing anything to virgin land except to put seed into it. But in Nova Scotia the first thing to be done to virgin soil was to lime it.

Now, that is a handicap right at the start to the farmer. The land has to be fertilized right at the beginning. In parts of Ontario virgin land will grow crops for two generations without any fertilizing except some farmyard manure.

Senator BRADETTE: If in the process of clearing the land they burn the stumps and so on, that would leave some ashes to fertilize the soil. Would that overcome the acid condition?

Dean SHAW: That would not overcome acidity; it would furnish the land with some potash, but it would not last long. Lime has to be applied, and its application makes possible the growing of legumes which will improve the soil and eventually bring it up to a neutral condition or at least with less acidity. It eventually becomes more valuable and useful land.

Senator BARBOUR: I think practically all the land in the Maritimes has to limed.

Dean SHAW: That is true.

Senator TAYLOR (*Westmorland*): Is it not true that some of the most fertile land has to have lime applied in order to get the best productivity?

Dean SHAW: I think you are right. That is why I mention this problem of acidity in the eastern part of the country. It is handicapped in an agricultural sense because something has to be added to the soil at the very early stage to bring it up to productivity.

Senator MCGRAND: Is that acidity condition due to the deposit of spruce needles on the soil?

Dean SHAW: No, they do not make it an acid soil. The difficulty is there is no limestone except in a few places in that part of the country. Anyone who is familiar with the Brockville area in Ontario knows that there are outcroppings of limestone all over the area. When we get up to northern Quebec, in the Laurentian shield, it is granite, although sometimes it is white and looks like limestone.

Senator CRERAR: But that soil will grow good trees?

Dean SHAW: It will grow excellent trees. In fact acid soils are more suited to the growing of coniferous trees than lime soils.

The CHAIRMAN: You state, Mr. Shaw, that as you go east this soil deficiency can be corrected by adding lime. I take it the land is thus better able to produce such crops as potatoes, is that right?

Dean SHAW: No, it does not apply to potatoes. If you lime potato soil you make them scabby.

Senator BARBOUR: The lime follows the potato crop, for the growing of grains?

Dean SHAW: Yes, grain, clover and such crops as that; but for potatoes you do not use lime.

Senator CRERAR: In the end it might be more profitable to grow on these particular soils that for which they are best suited. Wood is just as important today as cereals.

Dean SHAW: For the past few years I have been living closer to the pulpwood activities in the forests than I was previously. For instance, in Newfoundland and the other Maritime provinces the growing of trees from an income standpoint is very good. I have been told by forestry men that an acre of good spruce will produce a cord of pulpwood per year. Now, a cord of spruce pulpwood does not involve the cutting of many trees but it will bring in approximately $20 to the farmer.

Senator HORNER: And it will make a ton of paper worth $134?

Dean SHAW: That may be so, but the farmer does not get that much.

Senator BRADETTE: $20 is a good price.

Dean SHAW: Economists tell us that an acre income of $20 per year is better than the average range of farm income.

Senator HORNER: The average is not nearly that high.

Dean SHAW: Some of them do not get that much.

Senator CRERAR: Could that be done in perpetuity?

Dean SHAW: It could be done in perpetuity where spruce or fir grows naturally well. But it has to be done by the individual who owns the farm. The big company cannot carry on that type of operation economically. The difficulty with a clean cut area is that the land is seldom level, and there is a hazard of run off as soon as cutting takes place. There is no grass in the area and not much growth takes place quickly. As a rule a few small birches grow first.

Senator BRADETTE: And some poplars?

Dean SHAW: Yes, and evergreens.

Senator HORNER: The clean areas suffer further because the small trees are left without wind protection and they are soon blow over.

Dean SHAW: Yes, and if the big trees are left they die.

Senator TAYLOR (*Westmorland*): Mr. Chairman, I would like to make one point here. With respect to New Brunswick particularly, I think there may be some misunderstanding as to the addition of lime. I think all of our soils in that area, other than the sandy soil, require lime. For instance, the front portion of my farm was at one time, before I can remember, burned off. It was what we call a hackmatack area, which was burned in the dry season right down to the clay. While my father operated the farm he was never able to get a crop on that portion. I farmed there for a number of years and could get no crop regardless of what fertilizer I used. After I had completed a course in agriculture I started to use lime. Since then we have applied lime to that field about every six years, at the rate of about 1½ to 2 tons an acre, with very good results. Last year I grew there 112 bushels of oats per acre. The first year following the application of lime—which I put on in the spring—I did not get too good results, but the next year we had difficulty in making the hay. I figure we took at least four tons an acre off it. So, it is not always the poor soil that requires lime.

Dean SHAW: That is quite true. This problem of lime is a difficult problem because it would seem to be relatively scarce judging from the small number of people who use it, because it has to be subsidized by all the provincial

Governments and sometimes by the federal Government in some areas. Sometimes the freight charges on it are paid and part of the price is paid and yet it is seemingly impossible to get what good agriculturalists think should be applied to the lands of these areas. The farmer feels it is too costly or he has not the cash to do it, or he has not too much financial backing and he has to go out and buy some lime and it costs him too much.

Senator HORNER: Is there nothing that can be used to replace lime, nothing that would do equally as well, for instance potash?

Dean SHAW: Not on those soils. You have to use lime to start the thing. Now it is amazing what it will do. In Newfoundland I had to make a report a few years ago on the potentialities of agriculture in that province. They are not very good because there is little soil. They know that. One-third of their country is covered with trees, roughly; one-third is barren lands, so-called. They grow small bushes, Labrador tea and small birch and black spruce, and juniper or tamarack. A lot of it is just rock or moss or blueberry grounds, another one-third of it is in bogs or ponds or small lakes, and these bogs are peat bogs, not very old peat as peat is known, although many of them can make peat and make it into very good fuel. But they do not grow anything except some moss plants, sphagnum moss and some other types of moss and bog plants.

Senator HORNER: Do they grow any cranberries?

Dean SHAW: Not too many of them. Some of them do.

The CHAIRMAN (Senator Power): And bake apple.

Dean SHAW: Bake apple, yes.

But there are 6 million acres of bog land and water in that island. It is considered a liability in a way, you have got to build roads around it or if you build over it it is an expensive thing to do. Yet in studying that situation we felt that in these bogs there must be something that is of value for agriculture because the glaciers sweeping the soil off the rocks left some of it in these depressions, that is what the bogs are, great depressions in the rocks, and bogs may be found at all points from the sea level to the top of the mountains there. They are in all sizes, from 10 acres to 1,000 or 1,500 acres in one bog. The bog need not be level, it can be on a slope, and yet the water will not run out of it, it stays there within a few inches of the surface, and the bog remains highly acid and thoroughly saturated with water. The remark was made here that waterlogged soil is a cold soil. Now that is true mainly in the clay soils but with a bog soil it is not always true. A bog soil is sometimes 4 degrees warmer than the gravel soil beyond it, all the year around, and they seldom freeze in the wintertime because of the mossy covering which protects it.

Senator BARBOUR: Is the peat shallow or deep?

Dean SHAW: It varies from 4 feet to 7 or 8 feet. The deepest one I found was 27 feet where a roadway crossed it, they were blasting, but most of it was between 7 and 8 feet. Now that was waterlogged to within a few inches of the surface. In trying to find out whether they could be used we recommended that some experiments be conducted. The first thing to consider was drainage. You could not drain them by hand, because you could not walk on them easily without going down, and if you stood still you would begin to go down. They are very soft.

Well, the upshot was that they bought a machine called a water buffalo, which is built similar to a Caterpillar tractor but has wider treads, the treads on the water buffalo are 3 feet wide and they run a little differently from the Caterpillar. That machine will run on a bog no matter how soft it is, without sinking too far. I have seen them sink almost to the top of the housing.

Now, to make a long story short; they brought this machine over from Scotland. It started to operate last April and they drained over a 100 acres of bog by means of the ditches which were dug, the ditches being about 30 inches deep, about 15 inches wide at the top and 12 inches at the bottom and they are cut as clean as a spade would cut them. The material from that trench is deposited in a row about 5 feet away from the sides of the trench. Immediately the waters began to seep away.

That was done in May and June of last year. The top surface was cut up once with a Rotovator, a machine with revolving knives which cuts the moss and leaves it more level than it was before. Then we devised a type of lime spreader that could be used there and would not sink too far. We put tractor wheels on the spreader and regeared it. We used about 2.5 tons of lime to the acre on that bog that had never grown anything in a thousand years. We put on 500 pounds of fertilizer per acre. The quantities are perhaps higher than that might be needed. Then we seeded the area to grass. That was in July. In September that grass was 12 inches to 15 inches high.

Senator HORNER: What type of grass did you sow?

Dean SHAW: Italian rye grass. Over 120 acres of it, as green as the Parliament lawn, on a bog that had never grown anything of that kind before. Now the important thing was that it was the lime—without that lime it would not have grown grass.

Senator BARBOUR: How far apart did you dig the trenches?

Dean SHAW: In this case about 4 rods, and it was not thoroughly drained, you still could hardly walk on it when the grass had grown, but the surface was dryer while the development of the grass roots had the effect of forming the surface. They tell me it is coming through the winter very well and it may be that it will soon be firm enough on which to graze cattle.

Senator SMITH (*Kamloops*): I take it, Dean Shaw, that that might be a salvage scheme that would be altogether too costly for the average farmer.

Dean SHAW: It might be too costly, but it would be a help if the Government was to supply a custom ditcher. The main costs, are the lime and fertilizer.

Senator BRADETTE: Has that experience been worked out too in the northern Ontario muskeg land?

Dean SHAW: There you have a climatic condition that is somewhat different. In that area there is permafrost.

Senator BRADETTE: I mean in the northern Ontario clay belt: There is no permafrost there. In fact the climate is milder than Newfoundland.

Dean SHAW: I think it would be similar. I know that the bogs of eastern Labrador are identical with the bogs in Newfoundland. Across the strait of Belle Isle, which is only 14 miles, you will have the same bogs, with the same type of growth. There is no permafrost here. It starts somewhere between the eastern coast of Labrador and Ungava Bay. The soil men may know where it starts. But on the coast there isn't any.

Senator BRADETTE: What connection have the soak holes they have all over Alberta that the cows get into and they have to drag them out with three or four horses?

Dean SHAW: They are really muck. A bog is usually a peat bog, and a soak hole is the muck soil. There is a lot of that in Quebec. They are much richer. About all they need is drainage to get the water out, and they can be used. They are practically the soil as it is: They are not peat; they need drainage more than anything else.

Senator TAYLOR (*Westmorland*): Most of these bogs are almost entirely vegetable.

Dean SHAW: Yes; some of them are as high as 90 per cent water. The balance organic matter.

Senator BRADETTE: The muskeg is mostly formed by trees.

Dean SHAW: Moss is the important thing in a bog. There are trees and stumps and various growths.

Senator HORNER: I got a surprise in Ireland and Scotland. I always imagined, and we have been accustomed to think of bogs where there is no drainage, at the lowest point of land; but over there there are bogs up on the side of the hill, and the whole way to the valley is good farm land, but there is the bog on the hill.

Dean SHAW: Yes.

Senator HORNER: Apparently they have not made much use of it either.

Dean SHAW: They are making some use in Ireland now, but they left it to the last because there was enough other land up to now.

Senator HORNER: You mentioned the fertilizing of the land on the new soils. I was talking to a farmer there about clearing and bringing new land into production, and he told me that it cost about $100 in fertilizer per acre to tame the wild land. But if I understood correctly, you were finished then: it would remain tame land for all time. But you had to spend $100 per acre to bring it from wild to permanent grass.

The CHAIRMAN: Dean Shaw, is there not a problem in the east on salt water, in some of the provinces?

Dean SHAW: Yes; in the provinces of New Brunswick and Nova Scotia a lot of work was done many, many years ago by the original settlers of that country, in connection with dykes, or the blockingout of the sea from the marshlands adjacent to it.

These people were very successful. That is, when they worked by hand; they carried it on for a very long time; but gradually, for many reasons, the dikes became breached and the sea water came in; and as soon as it came in it ruined the soil, or part of it, by making it saline. A few years ago an arrangement was undertaken in co-operation between the provinces and the federal Department of Agriculture. Engineers from the P.F.R.A. group were sent down to survey these places and so on, and a lot of work was done. I understand that Mr. Parker, who is the head of that organization, will appear before you and will be able to give you all the details. But that is a big problem. There is a lot of valuable land in those marshes which once made good livings for the people who owned it, through the sale of hay and also the feeding of cattle and the growth of grain. Gradually, as the centre part of this continent became productive, it proved possible to raise cattle more cheaply on western lands and ship them down here and compete. In those early days there was some export trade for live cattle as well. They were finished on those grasslands and shipped to Britain. That business disappeared completely. There was a time when much hay was exported from that country as well. I remember one time in 1912 I was in Liverpool and I wanted to buy hay in connection with a shipment of cattle that I was taking to St. Paul, and the best hay I could get in Liverpool was that grown in Quebec and put up in the small Quebec bales, baled by hand on small presses in the barns. In those days the export of hay was big business, as well as the production and export of live cattle. Nothing like that is done any more; these changes took place, and the land has to be used for something else. When they could not make money by growing hay on marshes and exporting it, or feeding it to cattle and

exporting them, the land fell more or less into disuse. Now there are new ways of using that land and making it profitable. Interest has been aroused in the matter, and activity has been going on to rehabilitate these lands and bring them back to productivity again.

Senator TAYLOR (*Westmorland*): I would like to say in this connection that in the old days, even as far back as I can remember, most of these marshlands were producing hay for export.

Dean SHAW: Yes.

Senator TAYLOR: The export business in hay dropped off each year, and finally fell to nothing, although they can still cut hay and sell it. That is one of the reasons the dikes went down. They were not in a position to replace them.

Dean SHAW: I might say that my reason for recommending that an attempt be made to grow grass on the bogs of Newfoundland would not, perhaps, be working in the best interests of the farmers on the marshes of Nova Scotia and New Brunswick, because the hay Newfoundland gets today still comes from there, and it costs them $40 or $50 a ton. The man who grows the hay does not get that amount, but there is the cost of transportation.

Senator GOLDING: What do they plan to grow on that marshland?

Dean SHAW: Cereals or grass or hay. There is very little shelter, and what is indicated is largely grass, hay, forage crop type of thing, as well as ordinary cereals and oats. Vegetables, of course, can be grown, but they do not need all that land to grow vegetables.

Senator CRERAR: Coming back again to the experimental work in the boglands of Newfoundland, could you give us an estimate of the cost of bringing this land into a state where it can produce grass of twelve to fifteen inches in height?

Dean SHAW: Not yet. I do not think you could get a cost estimate yet, but obviously the cost up to date has been too high. But we have discovered one thing, and that is that drainage is not all important. It is the fertilizer and lime that is important, and for grazing purposes I am sure that I could find bogs in Newfoundland that if treated with lime and fertilizer they would grow grass where nothing is grown now. Cattle and sheep could graze on it.

Senator BRADETTE: Do you find that drainage is economically possible for that type of land?

Dean SHAW: Partially. Bogs are extremely hard to drain, but if they can be drained sufficiently—that is to have the water table lowered—you could grow grass and hay crops. You could also grow vegetables like cabbage, carrots and potatoes on that land.

Senator BRADETTE: Speaking of cabbage and these other vegetables, is your department dealing with this matter? I often heard members in the House of Commons claiming that Canadian producers could not supply carrots or cabbages during the winter months. I could never really believe that. What comments would you like to make with respect to that?

Dean SHAW: It is quite true that more and more fresh vegetables are coming in during the winter months.

Senator BRADETTE: They are being brought in from outside.

Dean SHAW: Our vegetables are stored and are not quite as fresh looking as the ones that come in with the tops on, and housewives prefer them. Telling our housewives that our own winter-stored vegetables are as good will have no effect on them.

The CHAIRMAN: Dean Shaw, I am sure that I speak for everyone here when I say that we are very grateful for your very illuminating remarks, and I am sure that before we go very far along in our deliberations we will be asking you to come back before us again.

Hon. SENATORS: Hear, hear.

Senator HORNER: We do not want to tire him out now.

The CHAIRMAN: No, he is too good. We have to make him last indefinitely like the crops on the Prairies.

Senator CRERAR: He has given us a great deal to ponder about.

The CHAIRMAN: Thanks very much for being with us today, Dean Shaw, but we will certainly hear from you again.

May I put in a plea for some of us that we meet next Thursday morning at 10 o'clock rather than at 9.30.

Hon. SENATORS: Hear, hear.

The CHAIRMAN: Does that motion carry?

Hon. SENATORS: Carried.

Whereupon the committee adjourned until Thursday, February 21, at 10 a.m.

1957

THE SENATE OF CANADA

PROCEEDINGS

OF THE

SPECIAL COMMITTEE ON

LAND USE IN CANADA

No. 2

THURSDAY, FEBRUARY 21, 1957

The Honourable C. G. Power, Chairman

WITNESSES

Mr. A. Platt, President, Alberta Farmers Union.

Mr. J. A. Cameron, President, Western Canada Reclamation Association.

Mr. S. J. Chagnon, Assistant Deputy Minister, Dept. of Agriculture.

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

85800—1

SPECIAL COMMITTEE ON LAND USE IN CANADA

The Honourable C. G. Power, Chairman

The Honourable Senators

Barbour	Horner	Stambaugh
Basha	Inman	Taylor (*Norfolk*)
Boucher	Leger	Taylor (*Westmorland*)
Bois	Leonard	Tremblay
Bradette	McDonald	Turgeon
Cameron	McGrand	Vaillancourt
Crerar	Molson	Wall
Golding	Petten	
Hawkins	Smith (*Kamloops*)	

26 Members Quorum 7

ORDER OF REFERENCE

Extract from the Minutes of the Proceedings of the Senate

WEDNESDAY, January 30, 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, Golding, Hawkins, Horner, Inman, Leger, Leonard, McDonald, McGrand, Molson, Petten, Power, Smith (*Kamloops*), Stambaugh, Taylor (*Norfolk*), Taylor (*Westmorland*), Tremblay, Turgeon, Vaillancourt and Wall;

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.

85800—1½

MINUTES OF PROCEEDINGS

THURSDAY, February 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 Power, *Chairman*; Barbour, Basha, Boucher, Bois, Bradette, Cameron, Crerar, Golding, Horner, Inman, Leger, Leonard, McDonald, McGrand, Molson, Smith (*Kamloops*), Stambaugh, Taylor (*Norfolk*), Taylor (*Westmorland*), Tremblay, Turgeon, Vaillancourt and Wall.—24.

In attendance: the official reporters of the Senate.

The following were heard:—

Mr. A. Platt, President, Alberta Farmers Union, Edmonton, Alberta.

Mr. J. A. Cameron, President, Western Canada Reclamation Association, Youngstown, Alberta.

Mr. S. J. Chagnon, Assistant Deputy Minister, Dept. of Agriculture.

The following documents were tabled by Mr. Chagnon:—

Agricultural Institute Review, 3 volumes.

Family Herald, dated February 14, 1957.

At 12.15 p.m. the Committee adjourned until Thursday next, February 28th, at 10.00 a.m.

Attest.

John A. Hinds,
Assistant Chief Clerk of Committees.

THE SENATE OF CANADA

SPECIAL COMMITTEE ON LAND USE IN CANADA

Ottawa, Thursday, February 21, 1957

EVIDENCE

The Special Committee on land use in Canada met this day at 10 a.m.

Senator Power in the Chair.

The CHAIRMAN: Honourable senators, I see a quorum. Would you please come to order. Perhaps I had better say that after listening to kindly admonitions and a few expostulations, from members of the committee, I feel that perhaps at this meeting at least we should hear the witnesses who have come prepared to address us before asking them any questions. I am therefore reversing the decision given last week. Is that agreed?

Hon. SENATORS: Agreed.

The CHAIRMAN: We have with us this morning the President of the Alberta Farmers Union, Mr. A. Platt; the President of the Western Canada Reclamation Association, Mr. James Cameron, and Mr. S. J. Chagnon, Assistant Deputy Minister of Agriculture. I have been asked to call the President of the Alberta Farmers Union first. Mr. Platt, would you please come forward.

Mr. A. PLATT, President of the Alberta Farmers Union.

The CHAIRMAN: Mr. Platt, would you like to address the meeting now?

Mr. PLATT: I should like to present a short preliminary statement on this matter. I am coming before you this morning not only as President of the Farmers Union of Alberta but also as a representative of the farm unions of British Columbia, Saskatchewan, Ontario, and Manitoba. I might say that we farmers—and that is what we all are—were delighted when we read in the press the Prime Minister's statement that this matter of land use and soil conservation was going to be investigated, and that a new Act would be brought forward.

We were even more delighted when we learned that a Committee of the Senate had been appointed to investigate this matter. We regard this to be of extreme importance as we are well aware of the splendid work that has been done by committees of the Senate on former occasions. For that reason we were particularly pleased that you had agreed to take on this assignment.

I suggest with all respect that perhaps this is one of the more important things that you have had to deal with for many, many years. This morning I would like to mention a few things that I think we might be able to give you information on in a general way at this time. We did not come prepared to give detailed information now but we would be glad to make written representations or appear for questioning at any time when we have our information gathered together in better form.

We had thought that we could be most useful by presenting the farmers' point of view. We do not pretend to be experts in soils or economics or any of these matters related to this subject, but we do perhaps have a point of view which would be useful in the questions that are before you; at least, we hope we can be useful to you in that regard.

One of the things that we would like to draw to your attention at this time is that in any plan that may be developed we think it is of the utmost importance that the planning and carrying out of local projects, and we envisage there may be many of these, should bring in the skills and resources of the local people; that they must feel they have a part in a program that is being carried out and provision must be made for allowing them to take part in committees or some such thing of that nature. We have no clear conclusions at this time but we would be prepared to make further representations on this particular matter.

Another thing that I would like to draw to your attention and that we feel has to have very serious consideration is the relation of land use to the whole agricultural economy. We are well aware that there is an expanding need for agricultural products in Canada, and we are equally well aware that we have tremendous resources for meeting that requirement. I have no doubt that before you have finished your deliberations you will have many schemes whereby production can be increased. We are suggesting that it is very important that these be introduced so that we maintain some kind of a reasonable relationship between production and the potential market. Of course, the reasoning for that is obvious, and we realize that we must err on the side of having too much production rather than too little, because it would be a dangerous sort of thing to confine our production so that there would be a danger of scarcity. This whole problem, of course, gets into the question of farm income. I do not think this problem can be entirely divorced from land use, and I was particularly pleased that your terms of reference were so broad.

I would like to suggest that in so far as conservation is concerned a prosperous agriculture is the greatest tool for soil conservation you can possibly get. A depressed agriculture is exactly the reverse. I believe that in your first deliberations on this matter one of your number drew attention to that fact and how it had affected the course of history down through the years. Cerainly when a farmer is under economic stress—and I am well aware that sort of thing is going on at the present time—he is not farming as well as he knows how, and when bad weather intervenes or climatic conditions become worse, he suffers from soil erosion, and all that sort of thing.

Keeping agricultural products reasonably priced has become a rather controversial question. The reason I believe it is controversial is that we have few facts on which to judge the relative merits of different schemes on. Economic research in this particular field has not been carried out as well as it might have been. I would not be at all surprised if a great deal of information were available, but it has never been brought out before the public; and in the public discussion of these questions oftentimes there is a great deal more heat than light. I would like respectfully to suggest that this might be an avenue where your committee could obtain expert opinion on the whole matter, and that it would be very useful not only to the committee, but also to farmers in Canada.

There are a number of other things I will mention very briefly. First of all, a land use program must remain very flexible and be a plan that can be put into effect, if this happens, or if that happens. I think the Gordon Commission, for example, predicted certain things would happen in agriculture in the next 25 years. Some of the things they suggested were somewhat startling; but if you look back over what has happened to agriculture in the last 25 years it may be that they were extremely conservative in their views. None of us has foresight to see that far ahead. As a result flexibility in land use programs must be given serious consideration.

I would also suggest that the whole problem of land tenure is related to this question in a number of ways. Because of the high capital cost

involved in agriculture today, we are almost certain to see, and perhaps we should see, a greater number of tenants on land as against direct ownership. If that takes place, problems of soil conservation will arise, unless certain patterns are set out for its protection.

There is also the question of the use of land and ownership rights. In many countries of the world the ownership rights are not as great as they were at one time. Perhaps it is not in the national interest that they should be. It is a field of investigation in which we would be prepared to make some recommendations, if you are interested in going into that facet of land use.

There are of course also the social aspects of the case; but, as a farmer, that is something I don't know too much about and perhaps should not get into. But we would be prepared to talk to you about it, because it deals with people.

It was, for example, suggested in the Prime Minister's original speech on this subject that perhaps in some areas people would have to be moved to another area. Of course that has happened previously; for instance, during the 1930's a great many people were moved from the drought area to other areas. At the time it seemed like the only solution, because it had to be done to make room, if you like, for those large acreages which are characteristic of Prairie farming. But many of those people who were moved from their homes into northern areas, if they are still young enough are about ready to be moved some other place. The movement of persons from one submarginal farm to another is a terrible thing to happen. We would suggest that where it does seem necessary to move people, incentive methods be used to persuade them. In the cases of old people and those who for other reasons do not wish to move, some arrangements for social protection should be made for them. Finally precautions should be taken to see that the problem does not arise again.

We would also suggest that in our opinion there would be great advantage in your committee holding a certain number of regional meetings, at which local people would have the opportunity to present local problems, and to stimulate general interest on the part of the people of Canada in this investigation. There is no doubt that land use and conservation are not solely related to agriculture; they are problems which affect all Canadians. It is therefore important that all Canadians, regardless of occupation, understand what is involved in this investigation, and what is proposed for the future.

Thank you very much.

The CHAIRMAN: Thank you, Mr. Platt. Are there any questions?

Senator MCDONALD: Might I ask Mr. Platt what type of farming he is interested in. Is it purely grain farming or does he raise livestock?

Mr. PLATT: I myself am a grain farmer.

Senator HORNER: From where?

Mr. PLATT: Lethbridge.

Senator MCDONALD: What association have you with the Federation of Agriculture in your Farmers Union?

Mr. PLATT: Our Farmers Union in Alberta is affiliated with the Canadian Federation of Agriculture, through the Alberta Federation of Agriculture.

Senator BARBOUR: In view of the 800 million bushels of wheat you have as a carry over this year, what are your plans for seeding wheat for the coming season?

Mr. PLATT: We will carry on our own farming operations as best we can. We grow a diversity of grain products.

Senator BARBOUR: I am speaking about the overall picture—do you intend to grow as much wheat this year as in other years?

Mr. PLATT: No. I think the acreage will be down again. But that may bear no relationship to how much wheat we produce. Our acreage has been reduced now almost 25 per cent from the peak period, and yet we are producing on the average many more bushels. Of course, that might or might not happen next year.

Senator CRERAR: Is that due entirely to climatic conditions?

Mr. PLATT: I would say it is almost entirely due to climatic conditions. There are of course technological advantages, beter varieties of seed, and varieties which resist rust, which have affected the production in the eastern areas of the western provinces. But the production is due for the most part to climatic conditions.

Senator HORNER: Moisture.

Mr. PLATT: Yes.

Senator CRERAR: Would you say there has been an improvement in farm practice?

Mr. PLATT: Yes, particularly in the dry areas. But it is very difficult to assess how much of the tremendous yields we are getting are due to improvement in practice, and how much is due to the increase in moisture. Most of the increase is to be found in what we call the Palliser Triangle, where we for many years got an average yield of nine or ten bushels, and for the past ten years have been getting over 20 bushels.

Senator CRERAR: Is the use of fertilizer becoming more prevalent?

Mr. PLATT: Somewhat, but not necessarily as prevalent as it might become if there was a demand for the product we have to sell. We are well aware that we can increase our yield by the use of fertilizer, but because of the shortage of cash and the difficulties in selling our product, we are not using it to the extent we could.

Senator HORNER: Is it not true that when you use fertilizer you must have moisture, or you may have a poorer crop than you would have had, had you not used fertilizer?

Mr. PLATT: Well, that is generally true. I would not perhaps admit that you would have less but you would not have the economic gain in a dry year.

Senator HORNER: That has been my experience in a dry year.

Senator CRERAR: Then in order to solve the problem of wheat surpluses perhaps we should pray for short crops for a few years.

Senator GOLDING: Does your Federation of Agriculture and Farmers Union Organization try to exert any influence on the producers to curtail their production of wheat, or is everybody on their own?

Mr. PLATT: Well, to quite an extent everyone is on their own. However, we have local organizations of farmers throughout the country, and part of the work they do is to study agricultural problems and have speakers come in from government and other organizations to speak on production and marketing problems. While we do not say as an association that a farmer must do this or do that, we do make use of the facilities provided for adult education in the country, and these are utilized and have an effect all over on production.

Senator CAMERON: Would you say, Mr. Platt, that the present wheat surplus is almost entirely a product of an unusual series of good years?

Mr. PLATT: Quite. I would go further and say it is almost entirely a product of the Palliser Triangle.

Senator McDONALD: Mr. Chairman, could I ask Mr. Platt to enlarge on his statement that farmers were removed from one submarginal area to another. Is it true that when those farmers were moved from one area that they were really forced out because of the dry period.

Mr. PLATT: Trying to answer your last question last: no, it was a combination of dry weather and economic conditions. That is the squeeze that was put on those farmers at that time. First of all, it was economic. The price of the things they had to sell dropped to a very low level, and that, of course, resulted in lack of capital to carry on the farm operation in a normal and satisfactory way. That was followed with dry weather which reduced yields and wind and other erosion factors set in. The same sort of thing is happening today. For example, with heavy duty cultivators and blades you could maintain a trash cover on the soil which is resistant to wind erosion. That is an expensive type of cultivation, and so now many of our farmers are going back to discers that they used in the early 30's, and this is a type of cultivation costing about one-third of the other. When you have not dollars to pay for fuel and labour, that is what happens.

The problem that arose in these areas was not due entirely to climatic conditions, it was also due to economic conditions. I would not like to leave the impression that all the farmers who left the drought areas in drought years were moved to marginal land.

Senator McDONALD: That was the impression you did give.

Mr. PLATT: Some of them were. I was trying to emphasize the importance of being careful in making that kind of a change, for it is a cruel thing to do to people.

Senator HORNER: I know there was some pressure put on by the province in that it offered to transport farmers, their belongings and machinery free of charge to the Peace river area from the Hannah area and south, and that area was turned into a huge special area. I would like to tell the story of an amusing incident that happened at that time. They were trying to say that some of the farmers were marginal farmers operating marginal land, and one farmer who was being moved to a new place asked the station agent there what the neighbours were like. The station agent, who must have been a bit of a philosopher asked the farmer in return what kind of neighbours did he have in the place he left. The farmer replied that they were a bunch of low lifers.

"Well," said the station agent, "You will find the same here." The next week another man was unloading his belongings and he asked the same question of the station agent, as to what kind of people were in the area, and the station agent then asked the farmer what kind of people did you leave and the farmer said, "I left the finest neighbours in the world, and I really hated to leave". "Well," said the station agent, "You will find the same here." That just illustrates that it all depends on the man.

Senator CRERAR: Coming back to the question that Senator Beaubien asked you a few minutes ago: would you consider it is a practicable proposition to get a voluntary reduction of 10 per cent in wheat acreage from all wheat farmers?

Mr. PLATT: I think it would be practicable providing there were incentives to do that sort of thing. By "incentives" I mean cash incentives. The same thing is happening to the wheat producer as in other lines. As the economic pressure increases one tries to produce the absolute maximum. That is, we are seeding stubble land now that we would normally summer-fallow,—which on the face of it seems like an extremely foolish thing to do, considering the amount of wheat we have on hand.

Senator CRERAR: What sort of incentive do you think would be necessary to get this reduction?

Mr. PLATT: We think something like the United States soil bank plan, not necessarily at the same levels but on the same principles, would result in a substantial reduction in acreage, particularly in the areas which are now contributing to the surplus. We are concerned that production does not shift too rapidly from wheat to livestock. We realize it has to shift some; we are all in favour of that; but a surplus livestock problem is a much more difficult problem than a surplus wheat problem.

Senator HORNER: Exactly.

Senator CRERAR: In the United States, I have been told, in the operation of the soil bank plan farmers tend to take out of production the poorer land on their farms, take the soil bank funds—which are substantial—buy fertilizer, put the fertilizer on the right land and grow a larger crop on the good land.

Mr. PLATT: Of course farmers are very ingenious people. I think perhaps that has occurred to some extent. But the fact remains that if your acreage is reduced substantially, sooner or later it is going to result in less production. The planning of wheat production is a very difficult thing to do.

Senator GOLDING: Is not the soil bank plan somewhat similar to our wheat acreage reduction, under which you get paid for summerfallow and taking the land out of wheat? Is it not something along that same line?

Mr. PLATT: It is something along the same line, except that the wheat acreage reduction that we had before was envisaged as being for one or two years. It was a short, temporary program. We think that a soil bank program might be a five to ten-year proposition, and that grass is a much more useful way of handling the soil than summerfallow.

Senator BRADETTE: From what we gather from newspaper reports, the wheat surplus situation is less acute in Alberta than in other western provinces, for the reason that Alberta farmers go into diversified production, such as growing beets and flax. Is the problem more acute in Saskatchewan and Manitoba?

Mr. PLATT: Not in Manitoba. The wheat surplus problem is confined to a region which embraces a large part of Saskatchewan and a smaller part of Alberta, and perhaps we have more farmers in Alberta who are not growing wheat than Saskatchewan has. But as to beet production, for example, the total beet area in southern Alberta would not be much bigger than a couple of fair-sized wheat farms. Well, perhaps that is not quite a correct statement. What I am getting at is that with respect to the production of special crops like beets and canning crops, the acreage is infinitesimal compared to the acreage involved in wheat or grain or fodder production.

Senator BRADETTE: Mr. Platt, would you enlarge on what you said about the Government program being flexible? What would be the full meaning of that statement?

Mr. PLATT: I am trying, of course, to envisage the sort of thing that this committee may be doing or recommending. For example, I would think that probably you would find there are a great many projects in Canada—drainage, irrigation and reclamation projects—where with the expenditure of certain funds additional land could be brought into production.

It is important that these plans exist, and the timing of putting these plans into effect is also extremely important because of their impact on the overall agricultural economy. You may line up a program and say that for the next ten or fifteen years you will do a certain thing in this way, but world conditions and changes in our own country may make it necessary to have your plan designed in an extremely flexible way so that you can go in another direction.

Senator CRERAR: Has your organization made any studies of the comparative costs of producing wheat in other countries as compared with Canada?

Mr. PLATT: Yes, in a broad sort of way but I do not have that information with me today.

Senator CRERAR: I was going to say that I think it is an important factor in the equation. Prices have been maintained at what might be called a high level. I am not suggesting at too high a level at the moment, and I know that I may be treading here on rather delicate ground. However, I do believe it is a fact that the maintenance of high prices for wheat holds an umbrella over countries that cannot produce wheat as cheaply as we can but which nevertheless do produce wheat at the existing world prices.

I have had some experience in the grain business and I recall back forty years ago, for instance, that France was an importer of wheat. The year before last France suffered a crop failure because of bad weather, but I believe in the preceding year she exported something like 80 million bushels of wheat. Other former importer countries such as Turkey, Syria and North Africa export wheat now. The theory has been—I do not know how accurate it is—that the maintenance of a high level of prices holds an umbrella over these countries and enables them to increase their production of wheat which comes into competition with what we produce. Would you say that the cost of production is an important factor in the success of the wheat farmer?

Mr. PLATT: Unquestionably it is, for wheat farmers are working on an extremely small margin. The rising costs that have taken place in the last few years have been much more important than lack of deliveries as far as your balance sheet is concerned. That is, we have been selling greater than normal crops and yet we are in economic trouble. That is just a relationship between cost and selling price. With regard to the world situation wheat production and the selling of it does not make economic sense at all. Wheat is produced and moved for reasons which have nothing to do with economics. For example, there are European countries that could import Canadian wheat of a high quality for less money than they are paying out subsidies to their local farmers.

Senator BRADETTE: That applies to France.

Senator HORNER: And to England.

Mr. PLATT: When you have a situation like that you can't apply the laws of free enterprise and normal economics at all.

Senator CAMERON: Then we have not in effect a free market for wheat today?

Mr. PLATT: Oh goodness no, nowhere, not even our great neighbour to the south.

Senator TAYLOR (*Westmorland*): Mr. Platt, when you were talking about the farmers moving out you referred to two factors, economics in the beginning and drought condition in the end. Would the fertility condition of the soil have anything to do with that movement?

Mr. PLATT: No, I do not think it had much to do with it. The other factor far outstripped it. After all, that land was practically virgin. At the most only twenty or thirty crops had been grown on it, but because of the generally low rainfall the development had been very little. What depletion did come in was the result of erosion, particularly wind erosion.

Senator TAYLOR (*Westmorland*): In other words, it was fertile soil which was just as good as any other soil in the general area?

Mr. PLATT: Yes, in the general area. Of course, it is a difficult thing to generalize about because there were patches of soil of poor texture which should never have been broken up in the first place. I refer to sandy soil and that sort of thing. However, as far as fertility was concerned, it was not a major factor.

Senator TAYLOR (*Westmorland*): There were some patches in it that were submarginal, I suppose?

Mr. PLATT: Oh yes.

Senator TAYLOR (*Westmorland*): What is that land being used for now?

Mr. PLATT: I think mostly as pasture land. Most has been turned into pasture land, which is one of the finest things the P.F.R.A. ever did. Some of this land in Alberta has been seeded into grass or it has returned into grass naturally.

Senator TAYLOR (*Norfolk*): Mr. Platt, would you be prepared to give us any information at the present time with regard to the production of land in the irrigated areas of Alberta? Has irrigation improved the farms?

Mr. PLATT: Oh, yes, the application of irrigation water enables you to build up the productivity of the soil. Just putting irrigation water on prairie soil by itself will not result in tremendously large yields, for the soil has been conditioned to a low rainfall; but when you can add water and then use fertilizer and soil-building crops, you build the productivity of that soil up to an extremely high level. That has been done. That is one of the things that has to be kept in mind in timing all these things, that a new irrigation project will not reach its acme of production until from five to ten years after the farmers are actually farming it.

Senator BRADETTE: Could not the situation you described in the west about tenants, and so on, be overcome by co-operative tenancy or something of that kind?

Mr. PLATT: It could on an economic basis, but there are social problems in co-operative farming which have not been worked out to the satisfaction of everybody yet.

Senator HORNER: You have suggested that the old system is no longer feasible where a man would sell his farm and have it paid for on the basis of crop payments. It is easier for a man now to rent his farm for cash.

Mr. PLATT: That is true. We are not in an expanding economy in agriculture any longer. Land values increase as the productivity of agriculture increases and as the market becomes surer. Costs of technological development, mechanization, and that sort of thing is such that a small piece of land is no longer of any value to a man; he must have a moderately large amount. The amount would vary from the prairies of southern Alberta to the Ottawa Valley, for example, but the same principle would apply in both cases. As the amount of capital is becoming so very large, the individual even with the best policies in the world will not be able to finance. It may well be that there will be a division whereby the landlord who owns the land, and the other man owns, for example, the dairy cattle, or something like that. I see nothing wrong with that if we can work out proper agreements, but it can be very dangerous from a soil conservation standpoint if we do not work out proper agreements. We might get the share crop land deterioration that happened in the United States.

Senator MCDONALD: In your estimation, Mr. Platt, how large should a farm be that is worked economically with machinery in the province of Alberta? I am speaking of grain farms.

Mr. PLATT: Well, of course there are all sorts of arguments about that, but we think on our better soils that you can have an economic unit with a section of land; and on our lighter soils that require less work, two sections. Now, that might sound like a lot of land, but that means one with moderate-sized machinery, with one man doing all the work, except perhaps a little time during spring and harvest. If you have less than that you are not

working either the operator or the machinery to the maximum. If you have more than that it is generally duplication, and you bring in management problems. I am not at all convinced that the larger ones are more efficient.

Senator HORNER: I think many farmers in the east would like to know the cost of machinery for a fully equipped farm, such as you mention.

Mr. PLATT: Oh, about $20,000 or $25,000, just as a rough guess. That would be a very economic setup, because many of our farms run much higher than that.

Senator LEGER: Would that be for machinery only?

Mr. PLATT: Yes.

Senator LEGER: What would a section of the land cost?

Mr. PLATT: Oh, I couldn't say; there is such variety between areas. Before the delivery situation got so tight in the Lethbridge area what we considered good wheat land of better quality was selling at $75 or $80 an acre.

Senator HORNER: You can buy two sections in the Pollockville area for two dollars an acre, and go over to the Drumheller area and pay $100 an acre.

Mr. PLATT: That is right.

Senator MCDONALD: Do the farmers generally take advantage of the provincial agriculture services in having soil tests, to find out in what respect the soils are deficient for the growing of their crops?

Mr. PLATT: I think in general, yes.

By Senator Cameron:

Mr. Platt, a question which may surprise some people was one to which you answered with regard to the increase in tenants. I do not know if that is true or not, but would you say it is partly because of the age of the settlement? For example, we are just in the stage where the pioneers are moving off the farms and turning it over to their sons or sons-in-law. They cannot afford to buy the land because they have not the funds in the present circumstances. Is that your reason for saying there is an increase in tenancies?

Mr. PLATT: Yes, that is one of the reasons. In western Canada, at least, we are still too new to have established any definite patterns of land tenure. That is why I think this committee should take a look at that problem so that direction can be given as to what pattern of land tenure we are going to establish.

Senator HORNER: To revert to the soil bank question we were speaking of. In any move of that kind, that would be bound to help conserve our resources of our land; it would be valuable in that regard, would it not?

Mr. PLATT: Oh, yes. That of course is the primary justification for government assistance on the project namely that it would have a very important effect on the conservation of our soil. Many of us are quite concerned at the lack of conservation that is taking place at the present time in our prairie soils. Part of it perhaps is carelessness; a great deal of it is economic necessity. Since we have had ten years of above normal rainfall one of these times almost surely we are going to have a return of more arid conditions and will not be in shape to cope with the situation because of unprotected soil and inadequate financial resources. In other words, we are in a position not greatly different than existed at the beginning of the 30's.

Senator MCDONALD: Going back to my former question: The farmers find that in having their soils analyzed the soils will be benefitted by the application of fertilizers. I am wondering, Mr. Platt, if you can give us any idea how much of the land needs to be fertilized. It has been said that one half or two thirds of the soils would be benefitted by an application of fertilizer. I

think we must anticipate that in the not too distant future we shall need to produce all the grain we can. How much of this land is going to grow larger crops if we apply the right kinds of fertilizers?

Mr. PLATT: Well, it will be a very high percentage. It will include practically all lands except the extra dry soils; even these may respond because the fertilizer business is changing very rapidly. For example, we know on our own farm that the application of nitrogenous fertilizers to our stubble land, providing we have a reasonable amount of moisture results in a substantially increased yield; and if you had asked me that question three years ago I would have said that the application of fertilizers to stubble is never worthwhile. That is what can happen with changing techniques and a new understanding in soil problems. But even at the present time a very high percentage of our cultivated area in the west responds to fertilizers. That is particularly true in our forage and pasture lands; and of course with irrigation it is essential.

The CHAIRMAN: Any further questions of Mr. Platt? We have other witnesses.

Senator CONNOLLY (*Ottawa West*): May I ask a question, although I am not a member of this committee? My question arises from another question which Senator Taylor asked. A couple of years ago a Royal Commission studied the question of irrigation through the south Saskatchewan river project. Now, what about irrigation as they studied it in the Palliser Triangle in connection with the withdrawal of lands there from wheat acreage and getting them into diversified farming, as they are in southern Alberta in these irrigated sections there? Is that a method of cutting down the surpluses, and getting into different types of farming?

Mr. PLATT: Yes, it is within quite narrow limitations. Any of the proposed irrigation projects will not reduce wheat acreage substantially. For instance in Alberta today we have approximately a million acres under irrigation which, out of the total land area of the province, is not a substantial amount. But of course the development of irrigation projects will increase the production of livestock and other products quite substantially. That is the chief justification for it.

The question in the development of irrigation projects—and there are a number of them—depends on several factors. In the first place we must watch our water resources. Our water is the basis of everything for both industrial and agricultural production. We were extremely wise in developing the St. Mary's River project, even if we did not want to grow anything on the land concerned; we had to make a claim to the water. We sometimes have to develop projects from that point of view, and of course we have to develop them as our need for future production arises. For example, the Gordon Commission in its preliminary report predicted that by 1980 we will need about double our present agricultural production. If that is to be realized, it will be realized by, among other means, increased irrigation facilities. I know the Commission did not recommend that we start these projects immediately. As I pointed out earlier, it takes a considerable period of time for their development to the point of production, and they must be so timed as to fit into the demand for agricultural production, as far as such timing is possible.

Senator CAMERON: Do you think we have now reached the time when we should consider the setting up of Prairie regional water authority?

Mr. PLATT: I do not know. You see, I sit on the other side of the river, and perhaps my viewpoint is coloured a bit on that point. Certainly we must see to it, whether it is by a Prairie regional water authority or by some other means, that the headwaters of our rivers are very carefully guarded. If we do not do so, we are going to run into problems not only of flooding but of shortage of water supplies for industrial purposes and for our cities. That can be an extremely expensive and difficult problem for the country as a whole.

One thing we might keep in mind is that Canada should be able to reserve substantial areas of land for recreational purposes, and such areas could be tied in to the protection of the headwaters of our streams.

The CHAIRMAN: Are there any further questions? If not, thank you very much Mr. Platt.

We will now call on Mr. Cameron, who is the president of Western Canada Reclamation Association.

Mr. J. CAMERON (*President, Western Canada Reclamation Association*): Mr. Chairman and honourable members of the committee. May I first say that I regard it as a great privilege indeed to have the opportunity to appear briefly before you this morning. I am a member of the farm delegation that has been in Ottawa for the past few days, and when the opportunity came for me to appear before you, I was pleased to take advantage of it.

We believe that your committee is fulfilling a very fine purpose; we are deeply interested in the work that you are doing, and we expect great things to come out of your investigation of soil use in this great country of ours.

May I tell you in a few words something about the Western Canada Reclamation Association. It is a fairly new organization, about eight or ten years old; it was set up for the main purpose of lending what help it could with respect to land reclamation, or land use. It is composed of various smaller groups something like a federation. For example, we have one group represented in the Western Canada Reclamation Association about which you have heard a great deal, namely, the Saskatchewan River Development Association. Going further west into Alberta we have what we call the East-Central Irrigation Association, which embraces a plan to develop the water resources of the Red Deer River with respect to irrigation and power. We have various projects throughout Alberta which are interested in reclamation, some of them quite extensive. We also have as members of our association watering groups in the valleys of British Columbia, and more recently we have a proposed project coming in with us from the northern part of Alberta some 200 miles north of the city of Edmonton, which embraces a great drainage scheme.

We have other projects, some of which have to do with proposed developments in the province of Manitoba. Our association, as I have said, is composed of all these various groups, and is in the nature of a federation.

With respect to another branch of our association work we are deeply interested in forest conservation, the protection of forest cover on the eastern slopes of the Rockies, and similar projects of conservation.

May I describe briefly one of the projects we are promoting in east central Alberta. We have in that part of our province a great stretch of Prairie land some three million acres in extent at one time closely settled by homesteaders. For a time it was thought to be ideal wheat country. Then dry years came during the 1930's and an exodus of settlers from that area took place. About 60 or 65 per cent, I believe of the farm people abandoned their holdings and moved out. Those who stayed developed ranch farms through leasing from the crown the land that had been abandoned and using it for grazing livestock. This is working out quite well, and probably will do so as long as we continue to have substantial rainfall, but we know from experience of the years that we cannot expect the rain seasons to continue as they have for the past seven. Through the years a plan has grown up to bring water into the area from the Red Deer river which flows right by that territory, to use it first of all for stock watering purposes and next for irrigation as a guarantee against shortage of feed for the maintenance of the stock-raising industry as we have it there at the present time.

As time goes on more and more irrigation would be developed as need arises, but the first consideration would be in holding our livestock production at its present level or increasing it. There would be a tendency, to take lands that are now used for wheat out of production and to transfer them to livestock raising.

Touching on the Saskatchewan scheme, here is a great project both for irrigation and power development, the possibilities of which are well known to your committee.

Our association are keenly interested in tree development on Prairie marginal land. We know that certain types of trees will grow to useful sizes on these lands in some 25 years after planting.

Mr. Chairman, I think this is about all I wish to say now except that I am not prepared, of course, to submit any great detail to you today but I would like to offer on behalf of our Western Canada Reclamation Association our services to you at any time that you would like to have them. We would be glad to prepare for you a brief that would advance in detail the benefits of land reclamation we have in mind.

The CHAIRMAN: Are there any questions to ask Mr. Cameron?

Senator BRADETTE: On the question of Mr. Cameron presenting briefs, Mr. Chairman, would it be necessary for some members of Mr. Cameron's association to be here personally to present it or could it be sent to the committee?

The CHAIRMAN: I would suggest that that had better be left until the next session of Parliament. I anticipate this session will be very short. At the next session the committee will be reconstituted and will have before it the information which has been given now and perhaps the committee then would feel that it would be well to ask these organizations to send a brief, or if it is decided, that the committee or a subcommittee should travel to the west to meet the persons interested in the regions concerned.

Senator BRADETTE: It was just a question, Mr. Chairman, of whether the brief should be presented to the committee by one of their members or sent in by mail.

The CHAIRMAN: I would suggest that possibly a subcommittee of this committee may decide to go out on the ground and have a brief presented to them with the projects explained to them there. However, I think that would be for the reconstituted committee to decide. However, I do not think there will be any objection, but on the contrary we would welcome receiving any briefs now and they will be placed in records for use at a later date.

Senator TURGEON: May I suggest, Mr. Chairman, that wherever possible briefs should be received by the committee before we visit any particular area so that each member may study the situation before he goes on the ground.

Senator HORNER: There has been very little use made of the water in the dam at Sunny Nook by way of irrigating land. Is that because that area has been having an unusual amount of moisture over that area?

Mr. CAMERON: Yes, that is the answer.

Senator HORNER: You would think if the dry years were to return there would be more use made of that dam?

Mr. CAMERON: Yes. There would be a scramble to get at 6,000 acres that are available for irrigation below that dam, and of course there is a case in point that while the dam is full at the present time and capable of supplying water to that area, yet about three dry years would make it so that there would be insufficient water in it.

Senator HORNER: You mean water would be lacking?

Mr. CAMERON: Yes. We have many of those dams, as you know, and they will all be in the same position, that is they will dry up in periods of long drought.

Senator HORNER: So in order to have a lasting supply we would have to have something on Red Deer river?

Mr. CAMERON: Yes, we would have to have a supply of water coming from the Red Deer in order to get an adequate supply.

Senator LEGER: How many cattle would a rancher have to have in order to succeed?

Mr. CAMERON: All ranch farms carry at the present time I would say from 150 to 500 head of cattle in that area. There are a few larger than that but that would be about the average I think.

Senator LEGER: That is, owned by one farmer?

Mr. CAMERON: Yes, by one farmer or rancher. Sometimes they are called ranchers and sometimes they are called farmers.

The CHAIRMAN: Isn't there any distinction between a farmer and a rancher?

Mr. CAMERON: In this case they are both, that is, everybody farms some—or mostly everybody—and also they carry a considerable number of livestock.

Senator SMITH (*Queens-Shelburne*): What acreage would be involved in a project of that kind?

Mr. CAMERON: You mean, in the irrigation?

Senator SMITH (*Queens-Shelburne*): No, in the ranches you speak of.

Mr. CAMERON: The ranch farms in the area will run from—most of them have about a section of title land or thereabouts—some more, some less—then the leased lands they carry will run all the way from four to maybe fifteen sections.

Senator HORNER: Some larger than that. Some up to 30,000 acres.

Mr. CAMERON: Yes, the largest are larger than that.

Senator LEGER: Would you say that the rancher today is in better financial position that he was 10 years ago?

Mr. CAMERON: Well, no, I would not say that, but I would say that we feel, at any rate in that area, that we could not carry on without livestock, and that while livestock prices have gone down they are still the best income we have in the agricultural work that we are doing there.

Senator McDONALD: Mr. Cameron, referring to the carrying on of drainage work in the north: we eastern members of this committee are ignorant of the detailed workings under the P.F.R.A., and we are anxious to find out if we can adapt the general principles of P.F.R.A. to drainage projects. I wonder if you could give us an idea of how much assistance you get and what is the assistance you get under the P.F.R.A. in your drainage work there.

Mr. CAMERON: Well, in our immediate area we have no drainage problem, of course, and I am not familiar with what assistance may be had from the P.F.R.A. in regard to drainage. But I spoke of this area in the north that as yet has not come into our Association, but they would be coming in with the idea, partly at any rate, that they might be able to get help for their drainage schemes from P.F.R.A., although it is not certain that they will be.

Senator LEGER: In connection with the drainage project that you have now, were the dams built by the farmers themselves or by the Government?

Mr. CAMERON: No. A certain number of dams have been built by private individuals on their own, but for the most part they are built with the assistance of P.F.R.A.

Senator CAMERON: You have said that after about three dry years the dams would not have enough water in them. Do you think that, if more attention were paid to conserving the run-off in the spring, we might get a longer expectancy of adequate water supplies from those dams?

Mr. CAMERON: Yes, on most of our water courses: a great many more dams could be put in to hold the run-off there when there is a heavy run-off.

Senator MOLSON: May I ask Mr. Cameron what area he is describing, geographically, in speaking of this ranch farm area? I am afraid I am a little ignorant about it.

Mr. CAMERON: It is in what we may call east central Alberta, about 140 miles north of the American border. You come to the Red Deer river; then it is from the Red Deer river northward for approximately another 100 miles. The western side is on a line north and south through the town of Hanna. The eastern side is the Alberta Saskatchewan border 140 miles to the east. There are approximately three million acres in the area.

Senator BARBOUR: You export most of your beef cattle to the United States?

Mr. CAMERON: Most of our cattle go to the Calgary market, from there. They are sold both as feeders and as beef. A good deal of the finishing is done. The grass in the area is of very high quality, and a great many of the stock are finished right on the grass.

Senator BARBOUR: Is there a percentage that goes to the States?

Mr. CAMERON: Yes, there is a percentage, because American buyers come up to the stockyards and buy them.

Senator SMITH (*Kamloops*): Is availability of feed grain for finishing in your general neighbourhood a factor in the economy of that farm range operation?

Mr. CAMERON: Yes. At the present time, since we have been having "years of rain", as we call them, the last seven years, there is considerable feed produced in the area, and a good deal of finishing is done. But when we get to dry years again there will be a shortage of feed; and that is one of the reasons we are anxious for this water development, so that it would make our livestock operation a permanent and dependable thing.

Senator LEGER: Do you need shelters for your cattle in the winter?

Mr. CAMERON: Yes; in our area we have to have a certain amount of shelter. It is broad prairie, and we are short of shelter.

Senator LEGER: You have to feed them also?

Mr. CAMERON: Well, in most winters we feed them, but not always. We have hard winters, like last year, when we have to feed for at least six months, but I would say that on the average we would feed not more than two and a a half or three months. We have to provide shelter from the winds for our stock,—but not expensive shelter.

Senator BARBOUR: The feed you have to purchase for your livestock, do you have to buy that from the Wheat Board?

Mr. CAMERON: Well, that is where most of the feed is purchased. There is not a great deal of feed bought in that country—very little, as a matter of fact. At the present time we are producing our own feed, and there is a good deal of grain being sold from that area at the present time. But any time that feed is required it is generally purchased from the elevators in the usual way, or from private individuals.

Senator SMITH (*Queens-Shelburne*): You can produce enough grain to finish your cattle in that area?

Mr. CAMERON: We are doing so at the present time.

The CHAIRMAN: Any further questions? Thank you very much, Mr. Cameron.

Hon. SENATORS: Hear, hear.

Mr. S. J. CHAGNON, Assistant Deputy Minister, Department of Agriculture, then came forward.

The CHAIRMAN: What are your functions?

Mr. CHAGNON: Assistant Deputy Minister of Agriculture.

The CHAIRMAN: What experience have you had up to the present?

Mr. CHAGNON: I was born on a large dairy farm in the Eastern Townships. I had my formal agricultural training at Iowa State College in the United States. I earned my way through school by milking cows. As a matter of fact, I milked cows for a good part of my early life. Upon graduating from college I worked as agricultural county agent for Polk County, Iowa. I returned to Canada to work in the Animal Husbandry Division at the Dominion Experimental Farm, Ottawa.

In 1924 and 1925 I returned to Iowa State College to do post-graduate work. In 1928 I was made Livestock Commissioner in the Department of Agriculture in Quebec. Later on I wanted to apply what I might call an agricultural recipe I had learned in England for different types of farming. I became Director of the Provincial School Farm, at Deschambault which the Quebec Department of Agriculture was operating. I did some teaching and was Director of Extension at the same time. For a time I was also the director of the dairy school at St. Hyacinthe, Quebec, and I was in business in Montreal. Finally I returned to Ottawa as assistant to Dean Shaw as Vice Chairman of the Agricultural Prices Support Board.

In the line of hobbies, I was in the tobacco business for five years as a producer and fruit farmer for about twenty years. I own two large orchards in Frelighsburgh, P.Q. Now I am at your disposal, Mr. Chairman, and I will try to be of service.

I wish to say that it has been quite an honour to have been invited to appear before this honourable committee. If it is your wish, Mr. Chairman, I would like to leave with the Clerk of the Committee a very excellent article that was prepared by Dr. J. G. Taggart, our Deputy Minister, and Mr. S. R. N. Hodgins, Director of our Information Service. This article covers certain work that has been done on Soil Conservation and Land Use by the Department of Agriculture. At the same time I would like to leave with your Clerk a study which suggests a national policy on soil and water conservation and land use, as prepared by the Agricultural Institute of Canada. This Association is made up of the technical agriculturists of this country. I would like to leave this information with the committee. I am sure it will make worthwhile reading.

So that I will not ramble too much in my remarks I would like to refer to a brief statement that I have prepared. About a week ago I heard and saw our Prime Minister on television. He spoke in French and he made a short comment on what he thought should be the aim of this committee and its purpose. I asked for a copy of the Prime Minister's remarks in this regard. My own translation of it goes like this:

"Everyone knows that the Senate has been called upon to make an inquiry on land use in order to find means. I know there are some to be found, to increase the production and the revenues of our producers of primary products."

I would like to confine my remarks to this. It seems evident there exists an agricultural problem at the present time. Incidentally, I intend to deal mostly with eastern Canada. Farming as actually practised does not seem

to provide a sufficient livelihood for a large percentage of farmers to permit them and their families to enjoy the average standard of living as exists generally in Canada today. Reasons for this present state of affairs are often offered such as—farms are too small, the cost of labour too high, prices for farm products are too low, and so forth.

Different remedies to cure this situation have been offered. Many of these have value, there is no doubt. I have been familiar with the technical end of farming for some thirty years now and I can tell you that this problem concerning insufficient revenues on farms is not a new one. I have heard about it ever since my young days at home.

One of my first duties at the Dominion Experimental Farm in 1921, 1922 and 1923, was to make a survey throughout different districts in the province of Quebec. The purpose of the survey was to ascertain the various revenues of farmers and to try and find out why some farmers were successful and others were not. I visited some 500 farmers in such places as Pontiac County, the Eastern Townships, Gaspe, and Rimouski. I found out that the revenues of farmers varied from $400 or $500 gross revenue up to $7,000 to $10,000.

In analyzing the results of the survey we found that all farmers with more than average production of crops, combined with more than average production per animal unit, were making money on their farms. The conclusion was that a farmer had no problem in getting sufficient revenue if his production index for crops equalled 110 combined with a production index from livestock of from 105 to 115.

Some progress has been made. Many farmers at certain times during their active life have solved this problem of insufficient revenue. A disclosure of the methods used by these farmers might be of value in trying to find a solution for the present day problems.

In nearly all cases where farmers have progressed and made a success of their farming operations, the basic formula has been the same—efficiency in their work. This is usually the result of education and greater knowledge of their profession. This efficiency is always expressed by more production per acre, per acreage unit, per annual unit, per labour unit, and so on. This all points to the necessity of higher soil productivity. This is the point I would like to stress before you this morning. Soil studies, some phases of land use and conservation were reviewed last week by Dr. Leahey and Dean Shaw much better than I could do it myself. I would like to limit my remarks on how to build this soil productivity and do it economically.

Our soil in general in Eastern Canada lacks fertility, with some exceptions, of course. Because of it our yields of different crops are low; our type of farming, which was the family type, meant rather small farms; therefore, our family farms if of low productivity do not yield in general enough revenue to meet in most cases the present day needs of the family.

Now, the soil productivity in eastern Canada can be built; it can be built in a relatively short time, and I am convinced of that; and it can be done economically. Many a small farm could give a much higher productivity, and the equivalent of much larger farms, with average productivity as we find a lot of them today.

My suggestion would be to investigate the possibilities of grass land farming in eastern Canada and better pastures. Eastern Canada is perfectly adapted to the growing of grass. The main factors to make a success of grass land farming in eastern Canada are the following: The proper use of fertilizers, lime, and drainage where necessary. Drainage is not required everywhere, but where necessary it should be provided.

Now, let us turn to other countries that have made a success of it. In 1926 I was asked to go to England to sell some steers. In those days, you remember, we were shipping our steers alive to England. Our experimental farms every year, or twice a year, made trial shipments. I was in charge of

one in 1926, a shipment of 600 head, and I spent a month or so in England and Scotland studying agricultural methods. In June I interviewed some of the farmers that bought my steers, and a story that one man in particular told me in a few words struck me forcibly. He was a retired farmer, living outside of Edinburgh, who had bought 50 steers, and I went and visited him. I saw the steers, and he had two fields of permanent pasture, each pasture of 25 acres a piece. He pastured 25 steers on each field acre. He was renting this land at twenty dollars a year per acre. I said, "I can't see how you can make a living doing this; we can buy land for this price in many districts in my country and particularly pasture land". He said that every year he spent six dollars for fetilizer per acre on that land beside the cost of rent. I had never heard of fertilizing grass before.

Senator BARBOUR: Six dollars an acre?

Mr. CHAGNON: Six dollars an acre; and when he made the calculation he proved to me that by doing nothing but just watching his steers all summer he was making $2,500 a year net profit. I said, "I am going back to discuss that with my director, Dr. Archibald, and when I got back I said to him, "We have to investigate something; we should put some fertilizer to grow grass." A few years before I had been making a survey all through the province, and Dr. Archibald asked me one question. He said, "Chagnon, what is the matter in eastern Canada, particularly Quebec and lower Quebec, why cattle are so small?" I said, "I don't know, we might find out." While busy doing survey work in that district I gathered from the fields—clover, timothy, orchard grass, and whatever I could find, filled small bags, came to the farm, went to see Dr. Shutt, our chemist, and asked him if he would analyze these samples. I then went in the fields of our Central Experimental Farm, and gathered the same types of grasses, and asked Dr. Shutt to do the analysis, and he found out what I had not known, differences of more than 50 per cent, in the same type of grasses, of calcium, phosphorous, and other bone building material. So I went to Dr. Archibald and told him, "I have found an answer for you, and that is the reason why the cattle are smaller in some districts." And then I said, "I have learned something in Scotland; we have to fertilize our pastures." We discussed it. That was in 1926. In 1927 we started to experiment, and we made our first studies at Fredericton. C. F. Bailey, then superintendent, started experiments, and the results he obtained were most remarkable. Returns were tripled and quadrupled on the pastures by adding about 50 pounds of fertilizer per acre. I have the reports here, in fact. Now, that started things, then we made similar experiments at St. Anne de la Pocatière, Lennoxville, etc.

A new technique of building productivity of pasture land had been found. It is now common knowledge in our country but not practiced extensively enough in the interest of profitable farming.

Later, when with the Quebec Department of Agriculture, the late Senator Godbout then my Minister, decided to establish a School and Livestock Farm at Deschambault, a small community close to Quebec, I applied for the position of Director, my intention being to prove that this theory of growing profitable pastures—profitable livestock production and building soil economically was possible.

Here is a short story of the building of soil productivity of this Deschambault Farm:—

On that farm of 180 acres,—some 50 head of cattle, 10 horses and a few sheep were wintered but 50 tons of hay had to be bought. Five years later on the same farm but after pastures had been established and well fertilized, the same farm could winter over 100 head of cattle, horses and had a surplus of hay. No fertilizer was used on that farm except on pastures at a rate of 6 to 800 pounds every 3 years,—some lime and small quantity of fertilizer on

hoed crops such as corn, roots and potatoes but in small quantity. The yields in crops were then increased to 4 tons of hay to the acre and I remember one crop of roots (mangles) of 54 tons to the acre which must be very close to a record in yield.

Dr. Archibald also became sold on the possibilities of pasture improvements and here are some of the things he said in a well prepared paper, entitled, "Grassland in Eastern Canada." This was prepared after his visit to New Zealand. In his conclusion he had this to say about New Zealand and the application that could be made in Canada.

> They are in New Zealand systematically building soil fertility, and they are doing it by the general use, intelligently based on sound information, or fertilizers on their grasslands. The other point is that the work of their splendid research stations in grasslands and animal nutrition is followed closely by a very high percentage of their farmers and all who are attempting to obtain the greatest production from their land not this year but over a long period of years yet to come.
>
> To compete, we must follow their example as much as possible, and at the same time strive to produce better and cheaper winter feeds, develop better and cheaper methods of storing feeds, use better machinery and at less cost per acre production, and produce still better livestock.

We cannot produce better livestock cheaply unless we have cheap rich feed for them; we will not get that rich plentiful feed unless our soil is productive. To get that production we must feed the soil.

> This is no mean challenge to Canada and Canadian scientists and farmers, and to industry that is supporting our agriculture. To me, Canada, and no place more than Ontario and Quebec, is the most beautiful country I have ever visited. There is no reason why these two major parts of this great country and continent cannot overcome such handicaps as may exist and be as prosperous agriculturally and industrially as any other country in the world.

Coming back to grass farming, I think some of your members should read this book entitled "Grassland Farming in the humid Northeast", which deals with what is being done in the eastern States. Those of you who do not have time to read the book through would do well to buy it just to look at the pictures of what is being done. There you will see views of poor desolate areas which have been transformed by the use of a bulldozer, some fertilizer and a little seed, and have become luscious pastures.

Senator HORNER: May I ask you how you built up your farm for greenland purposes? Did you rotate your crops, and then plow your grassland up?

Mr. CHAGNON: No. I started first with the recipe I learned in Scotland for a permanent pasture. I developed a permanent pasture, and instead of using 50 per cent of the farm to grow poor grass, I cut it to one-quarter. By the use of fertilizer I was able to grow more feed, produce more and better cattle; and as a result I had more manure to fertilize less land since pasture was fertilized with chemicals. In that way I was able to build up the organic matter in the soil. What we need on our eastern soil is more fertilizer for the growing of trees, grass and feed for cattle. In that way you build up the organic matter in the soil and prevent erosion. And in that way the farmer can become relatively well off.

Senator HORNER: Do you fertilize your grass land every year?

Mr. CHAGNON: No, every three years. That was the recipe followed in the old days. But after a farmer practices it for a while he may change from a permanent pasture to a semi-permanent pasture, re-seeding it when he thinks it is required to provide sufficient feed with enough legumes in the mixture. If he is supplying milk to the Montreal trade, he may choose to fertilize every year.

Senator BRADETTE: Would the grass lands of the eastern townships and Scotland be rocky and hilly?

Mr. CHAGNON: The eastern townships and Scotland are about the same.

Senator BRADETTE: Rolling and hilly land?

Mr. CHAGNON: Yes, rolling and hilly land.

Senator BRADETTE: Not always adaptable for the plow.

Mr. CHAGNON: Perhaps not well adapted for the plow; but some of it is better adapted for grass, and is used for grass.

Senator BOUCHER: With respect to the areas you visited in the east, would you tell the committee what is the average size of the farms?

Mr. CHAGNON: They would have a total acreage of about 125 or 130 acres, but the average amount under cultivation would be 75 to 100 acres. One may see lots of successful farmers with as little as 60 to 75 acres of tillable land.

I do not think, Mr. Chairman, your committee should end its study until you have obtained all the information as to the excellent work that the joint committee on greenland farming does in the eastern States. I have here some of their publications: "Green Pastures", which gives the story of a successful Italian farmer in Massachusetts—indeed it reads like a fairly tale. Other publications are "Green Fields are Gold" and "Dollars and Cents in Grass Silage."

I was brought up in the area of Vermont, New Hampshire, Maine and Massachusetts, where some of the most successful farmers in the eastern States succeed because of that recipe.

I am sure Senator McDonald will be interested in this story as it applies to Nova Scotia; it has to do with some of the work we are doing at the Experimental Farm at Nappan. I have here the third number of a review we are publishing called "Research for Farmers", which is published under the Department of Agriculture. This is to go to extension men, rather than to farmers. We are trying to digest the result of scientific research and to pass that information on through the extension men, county agents and so on, who in turn will place it in the hands of the farmers. There is an excellent article on the possibilities of Maritime dykeland for pasture. Here are some of the results that have been obtained on the uplands—and that is not low-productive land—on the farm at Nappan, where fertility is higher than on the average farms. The check plot where no fertilizer applied—beef production was 233 pounds per acre, it is shown with the use of lime plus superphosphates the same acreage can produce 445 pounds; on the dykeland the ratio is 365 to 548 pounds for fertilized plots.

Senator MCDONALD: What percentage of the fields had to have lime applied? As you know, in Nova Scotia a large percentage of our fields need lime.

Mr. CHAGNON: Yes; nearly all eastern Canada needs lime. Fortunately our limestone deposits are well distributed in eastern Canada.

Senator MCDONALD: How about that area in the north-eastern United States?

Mr. CHAGNON: It needs lime too. In this country we have a good policy of lime distribution to the farmers, the provincial and federal governments co-operate, transportation is paid, and deposits of limestone are fairly evenly distributed throughout the country. Most of our soil is acid and if it is it needs lime. Farmers can find out if their soil is acid by sending in samples to their Provincial laboratories.

Senator MCDONALD: Very important.

Mr. CHAGNON: As I say, we have an excellent policy of lime distribution. The lime will be delivered to the farmer at $2.50 or $3.00 a ton. We recommend to the farmers its application to acid soil in rotation, that is, apply a couple of tons every time they turn over their rotation every four or five years.

Now, on the dyke lands, I have a case where 363 pounds of beef were produced to the acre when not fertilized, and that production rose to 548 acres when fertilized. Any land in eastern Canada that can produce 500 pounds of beef to the acre, with beef at $20 a hundred, a total of $100 return per acre, that is a fair return.

Senator LEGER: What is the mixture of fertilizer that you put on this land?

Mr. CHAGNON: Superphosphate seems to be the one most needed element. Superphosphate will help in the production of leguminous crops, clover, alfalfa and the like. But to convince a farmer who has never used fertilizer I would recommend a complete fertilizer with some nitrogen in it to give it a start.

Senator MCDONALD: Following the application of lime?

Mr. CHAGNON: Following it yes, but today lime can be used in many ways. We used to recommend putting it on ploughed land alone.

Senator BARBOUR: Did you say that you used about 500 pounds of lime on the pasture, per acre?

Mr. CHAGNON: No, no, about two tons to the acre at every turn of rotation, five or six years. The amount of fertilizer may vary from 400 pounds, 500 pounds or 600 pounds to the acre.

Senator BARBOUR: But on permanent pasture, if you were to fertilize it every year how much would you need?

Mr. CHAGNON: Well I probably would not apply it every year. I would apply it every three years. A good application once in a while is better than a dribble more often.

Now, there is an organization in the United States that makes a living, and a very good living giving advice to farmers. I do not know whether you have heard of the Doane Organization or not. It is an organization located in St. Louis, Missouri, and a pretty good farming district that is. Farmers can ask this organization for advice and they pay for it.

Senator BRADETTE: Good for him.

Mr. CHAGNON: And that organization can afford to advertise in a paper like this national dairy magazine. This organization provides a service to the farmer such as is provided by certain management consulting firms to industry.

Senator MCDONALD: We do not need that service here do we? The governments are doing it for us.

Mr. CHAGNON: We are trying to, but we would like to have even more listeners and followers. Maybe if we were to charge more we might get better results.

The CHAIRMAN: Maybe that is why they appreciate the advice because they pay for it.

Mr. CHAGNON: I listened to this man speaking. He spoke to a very important meeting a year ago, and I will read to you a summary of his speech.

> Some years ago, at a conference on "agricultural communications" held in Chicago, a conference that brought together representatives of the agricultural colleges and state experiment stations and leaders of agricultural extension at county, state, and federal levels, one of the

speakers was the head of the Doane Agricultural Service, Incorporated—a commercial advisory service that advises on farm management just as some of our large organizations advise on business management.

After reviewing the cause of low net income on many farms in the mid-Western States where he carries on his business and tracing it mainly to lack of volume of production, this authority suggested various means of increasing output—the three chief of which were using more land, using more labour, and using more fertilizer.

Land in that area, he pointed out, is costly. Labour throughout this whole continent is costly—and has probably gone up faster than any other factor in the last 15 years. Fertilizers, though calling for the outlay of money of course, have advanced less in cost in relation to the extra bushels of grain or unit of pasture yield than have the other factors over which the farmer has control. Therefore, when his firm is asked to advise on how to increase the productivity of a given farm economically, the first suggestion made is to use more fertilizer with a view to getting more from the present acres with the labour already available.

There you have it all in a nutshell.

Now, how are we doing it? Well, the way that we are doing it is enough to make me cry, sometimes. We have been investing in fertilizers but how are we using it. We have made a little study of its use in other countries, and here is what we find: the Netherlands apply approximately 63.3 pounds of nitrogen, 102.8 pounds of phosphorous, and 170 pounds of potash per acre per year. Belgium comes next, Denmark follows, then the United States, and Canada is a way, way down the list. These are the figures for Canada: .6 pounds of nitrogen, 1.4 pounds of phosphorous and 1 pound of potash. According to my reasoning of the matter, we are using 100 times less than the Netherlands.

The world's average use of commercial fertilizers is small, being 3.1 of nitrogen, 5.0 phosphorous, and 3.2 of potash, but it will be seen that Canada is using approximately one-sixth less than the world's average and in nitrogen and phosphorous only about one-fifth of that used by the United States. Now, regarding pastures, and in this connection it is of interest to note what New Zealand is doing with her 18 million acres of improved pastures. Actually, that country uses approximately 700,000 tons of fertilizer every year, just for pastures. That is according to the figures I have taken from this address of Dr. Archibald, and I am sure that these figures are correct. It gives here the other fertilizer that New Zealand uses for other crops. With increased costs of production, there is more difficulty in finding the money to provide the necessities of life according to today's way of life of our families.

Here is how we are using fertilizers in eastern Canada. I have the figures for Quebec and Ontario. In 1940 Quebec used 81,000 tons and Ontario 147,000 tons; together, about 220,000 tons, for as much pasture as there is in New Zealand, where they are using 700,000 tons. In 1945 the figures rose in Quebec to 145,000 and in Ontario to 196,000; in 1949 Quebec used 150,000, and Ontario 327,000. Only 148,000 tons were purchased in Quebec in 1950 as compared with 150,000 the year before; Ontario increased its consumption to 346,000 tons. In 1954 Quebec was using only 139,000 tons, and Ontario took up to 426,000 tons. But let it not be supposed that these quantities were used for growing grass. I might go to New Brunswick, or even Nova Scotia and Prince Edward Island, and meet farmers whom I would have to advise to use less fertilizer, because they were using too much, at any rate not in the proper places. We have heard of some farmers who were using as much as two tons of fertilizer per acre to grow potatoes. No potato crop can consume that much fertilizer in a year. It would be better to use more for grass,

build up the soil and increase the productivity of the land, so that when it came to be used for the growing of potatoes there would probably be potatoes of better quality in larger quantities and at much less cost. That is better than, so to speak, mortgaging the land to the extent of $100 an acre for potato growing before the seeding is done and, of course, before we know whether there is going to be either a crop, or a market when the crop is harvested. Would you care for me to give one or two illustrations?

The CHAIRMAN: Yes; go ahead.

Mr. CHAGNON: I would like to tell you a few stories of farmers and give you a picture of how they have succeeded, to emphasize the necessity of productivity. A young man was working for the Ontario government in 1932, a time of difficulty which most of us in this room are old enough to remember. The government decided to dismiss a number of its employees, and this young man, not because of inefficiency but because he was the youngest of the group, lost his position as district representative. All the money he had was $1,700. In those days it was practically impossible to get another job, at any rate without a great deal of difficulty. All his father could do for him was to guarantee his note of $4,000 at the bank. This was the extent of his resources, and with the money he bought a run-down farm outside Chatham, Ontario. In 1954, twenty-three years later, I took a Russian delegation to visit that farm. This man is now the owner of 1,200 acres, of which 800 are tile drained. When we were there he had 500 steers under feed, 300 hogs, and about 11 permanent employees. He started on his way to success when hogs were worth four or five cents a pound, beef was selling at five and six cents a pound, and butter at 16 cents. The story of this man's success was so interesting that Mr. Matskevitch, the Soviet minister of agriculture, whose other farm visits were limited to two hours or less, passed a day and a half on that farm. I asked Mr. Kerr, the owner, what were the factors which contributed to his success. He replied, "fertilizer, to build the productivity of my farm; and hogs." He has a good general-purpose farm; that is the story.

If honourable senators would care to check they will find, as I have said, that adequate fertilizing will double, treble and quadruple the yield per acre.

Senator MCDONALD: Would that all farmers followed your suggestions!

Mr. CHAGNON: It is a question of education and extension. Your committee, sir, can do considerable good by your recommendations. I am sure it will make more than one good recommendation, but if it will come out strongly for this one, I am convinced that it will bring great benefit to Canada.

The motto should be, "Knowledge, courage, work, optimism and fertilizers for grass farming".

Senator TAYLOR (*Westmorland*): I wish to move a vote of thanks to Mr. Chagnon, and also to the speakers who preceded him.

The motion was agreed to.

The CHAIRMAN: Will the steering committee kindly remain for a moment or two?

Whereupon the committee adjourned.

1957

THE SENATE OF CANADA

PROCEEDINGS

OF THE

SPECIAL COMMITTEE ON

LAND USE IN CANADA

No. 3

THURSDAY, FEBRUARY 28, 1957

The Honourable C. G. Power, Chairman

WITNESSES

Mr. J. B. Lemoine, President, Union Catholique des Cultivateurs, Montreal, P.Q.
Mr. E. M. Taylor, Deputy Minister, Dept. of Agriculture, Fredericton, N.B.
Dr. F. W. Walsh, Deputy Minister, Dept. of Agriculture, Halifax, N.S.

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

86133—1

SPECIAL COMMITTEE ON LAND USE IN CANADA

The Honourable C. G. Power, Chairman

The Honourable Senators

Barbour	Horner	Stambaugh
Basha	Inman	Taylor (*Norfolk*)
Boucher	Leger	Taylor (*Westmorland*)
Bois	Leonard	Tremblay
Bradette	McDonald	Turgeon
Cameron	McGrand	Vaillancourt
Crerar	Molson	Wall
Golding	Petten	
Hawkins	Smith (*Kamloops*)	

26 Members—Quorum: 7

ORDER OF REFERENCE

Extract from the Minutes of the Proceedings of the Senate

WEDNESDAY, JANUARY 30, 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, Golding, Hawkins, Horner, Inman, Leger, Leonard, McDonald, McGrand, Molson, Petten, Power, Smith (*Kamloops*), Stambaugh, Taylor (*Norfolk*), Taylor (*Westmorland*), Tremblay, Turgeon, Vaillancourt and Wall;

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.

86133—1½

MINUTES OF PROCEEDINGS

THURSDAY, February 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, Boucher, Bois, Bradette, Cameron, Crerar, Golding, Hawkins, Horner, Inman, Leger, Leonard, McDonald, McGrand, Molson, Smith (*Kamloops*), Stambaugh, Taylor (*Norfolk*), Taylor (*Westmorland*), Tremblay, Turgeon, Vaillancourt and Wall—24.

In attendance: The official reporters of the Senate.

The following were heard:—

Mr. J. B. Lemoine, President, Union Catholique des Cultivateurs, Montreal, P.Q.

Mr. E. M. Taylor, Deputy Minister, Dept. of Agriculture, Fredericton, N.B.

Dr. F. W. Walsh, Deputy Minister, Dept. of Agriculture, Halifax, N.S.

At 12.45 p.m. the Committee adjourned until Thursday next, March 7th, at 10.00 a.m.

ATTEST.

JOHN A. HINDS,
Assistant Chief Clerk of Committees.

THE SENATE OF CANADA

SPECIAL COMMITTEE ON LAND USE IN CANADA

OTTAWA, THURSDAY, February 28, 1957.

EVIDENCE

The Special Committee on Land Use in Canada met this day at 10 a.m. Senator Power in the chair.

The CHAIRMAN: Will honourable members come to order, please? We have a very heavy agenda this morning, so I think we should commence at once. Dr. Walsh, of Nova Scotia, who had a pretty difficult time in getting here, has just arrived, and will be here shortly.

I think we could begin the proceedings by asking Mr. Lemoine, of the Union Catholique des Cultivateurs, Quebec, to give evidence. Mr. Lemoine, would you care to come forward?

J. B. Lemoine, president, Union Catholique des Cultivateurs of Quebec.

The CHAIRMAN: I understand that you will be giving your evidence in English, Mr. Lemoine?

Mr. LEMOINE: Yes.

The CHAIRMAN: Would you tell us what your official position is?

Mr. LEMOINE: Well, Mr. President, and Senators, I am President of the Union Catholique des Cultivateurs of Quebec, a farm organization which has about 42,000 members; and I am also second vice-president of the Canadian Federation of Agriculture.

The CHAIRMAN: And you have a brief?

Mr. LEMOINE: Mr. Chairman, I thought it would save time, and at the same time I will be more accurate with the facts, if I did prepare a very short brief, and read it first.

On behalf of the organization I represent and myself, I want to thank you very much for the opportunity given me to appear before this Senate Committee.

I am not in a position at this time to present you with a complete study of the present situation of Quebec agriculture. I cannot give you but a general outlook of the situation as I see it. It is our intention to present to you at some later date a more comprehensive and elaborate study of the state of agriculture in Quebec and the needed adjustment and rehabilitation.

Our agriculture has already gone through drastic changes during the last 15 years. From 1941 to 1951, the total population living on farms went down from 838,861 to 792,756; the number of farms decreased by at least 10 per cent. The last figure is our own appreciation, and we took into consideration the change made in the definition of a farm use for the 1951 census.

Nevertheless, productivity of our commercial farms has shown an upward trend. Taking 1935 as a basic period or 100 per cent, the index of physical volume of production is established at 120.7 per cent in 1952. On a per capita basis, it has doubled in the same period. But the meaning of this is that bigger farms have become bigger, and the small ones, smaller, or disappeared.

As an example, the number of milk cows on our 134,000 farms in 1951 is 1,106,266; in 1956, we had 1,154,000 milk cows on less than 100,000 farms.

The average number of milk cows per farm in 1951 was 8.2 cows. In 1951, 58,000 farms in Quebec had 8 milk cows or more. Average number of cows on these farms was 17. On the same average for 1956 there should be over 20. In 1956 we produced 6,270,239,000 pounds of milk, which is an all-time record. Quebec is now the highest milk producing province in Canada.

In 1951, which registered a record year income for agriculture in Quebec, only 35,000 farms out of 134,000 sold $2,500 or more worth of farm products. Based on the accepted fact that Quebec is divided into three great physical regions agriculturally, namely: the upper St. Lawrence valley, the Appalachians, and the Laurentian which comprises the Lake St. John area. It must be recognized that this increasing productivity or effectiveness in farming is mostly located in the St. Lawrence valley farming areas. We find there the highest proportion of fertile soil. As you know, that is the area surrounding Montreal and Quebec city markets.

The farming industry and the problems it has to face are much different in the other two natural regions of our province. The Laurentian physiographic area is mountainous with a small percentage of tillable land. The other, the Appalachians, which includes the south-east part of Quebec, although quite mountainous, has a greater percentage of arable soil with a quality ranging from submarginal to fertile land. Roughly, 60,000 farm units are located in these last two areas. Sometimes I wonder if there is another group of Canadian farmers whose economy has been more disturbed than that of thousands of farmers working land in the Laurentians and Appalachians, particularly those engaged in both farming and forest industry.

In the upper St. Lawrence valley in 1951, out of 45,000 farms 16,500 sold $2,500 or more worth of agricultural products, or about 36 per cent. In the Appalachians in the same year 13,500 out of a total of 60,600 farms, or about 22 per cent, sold to a value of $2,500. For the Laurentian, it was 3,065 out of 21,650, or 14 per cent. In the Lake St. John area, it was 2,000 out of 6,700, or about 30 per cent.

An inquiry was made in 1956 in 13 out of 22 district federations of U.C.C. The districts were as follows: Abitibi, Joliette, Montreal, St. Jerome, St. Hyacinthe, Three Rivers, Quebec north, west, east and south, Rimouski west and east, St. Anne de la Pocatière, Témiscamingue. Some 611 municipalities were covered. The inquiry revealed that out of 60,621 farmers, only 27,967, or 46.2 per cent, were living entirely from the income of their farm operations. The balance, 32,654, added to their farm income as follows: 19,583 as lumbermen and 13,071 as employees in industries. Of those adding non-farm sources of revenue, 13,851 earned more in their non-farm occupations than in farming.

One who takes a close look at the present situation will question whether we are or are not in the creation stage of an under-privileged class of people within our farm population.

The industrial development in Quebec should be a stimulus for the optimum use of our agricultural resources. The industry creates a market for food. Lemelin, in *The State of Agriculture,* says:

> History supports the hypothesis that the relatively slow progress of agriculture in Quebec is largely due to the belatedness of industrialization...

And he adds:

> If industrial development had been more diffused, the prosperity of agriculture would have been more general, other conditions permitting.

The Gordon Commission in its preliminary report forecast 26 million people in Canada by 1980. There is no doubt Quebec will have its share in

this increasing of population. It can be assumed that there will be an increased market for farm products in Quebec and Canada as a whole.

On the other hand, there is a limit to the available arable land in Canada and, in particular in the east. Moreover, agriculture had to adapt itself to fast changing conditions in the last 15 years and will still have to cope with changes in the years to come. This is as much true for Quebec as for any other part of Canada.

The figures I already cited indicate that only one-third of Quebec farmers have been able to adjust themselves to present day conditions. Many factors are responsible for that. But that does not imply that there is no future in agriculture for those Quebec farmers who have not up to now been able to adapt themselves.

I am convinced that there is a definite job of rehabilitation to be done in most parts of Quebec agricultural areas. The existing data relative to land conservation, hydrography and forestry geography may be sufficient to enable us to evaluate the basic elements of the solution, but all of this data, before it can be used scientifically, will have to be completed by data obtained through economic and social research. I want to emphasize the necessity of social research. I want to emphasize the situation that will be created by any change is as much a social problem as it is an economic one. In order to inaugurate an efficient problem of land rehabilitation and conservation, it is absolutely necessary to have before us the data obtained through such research. I might say that such a study may lead to reforestation of many areas, and also to the more efficient use of arable soil.

The arable land in the province of Quebec, except for limited areas surrounding Quebec City and part of the Montreal plain, where truck gardening and canning crops have been steadily expanding, is being used mostly for dairy farming, milk production providing the main income. Through the intensive production methods, there is an increasing productivity of milk and some other specialities. To operate under such condition calls for heavy expenditures of capital on buildings and for farm equipment, this mechanization being the result of labour shortage and the impossibility of farmers competing with industry for paid labour. Those conditions, coupled with the location of many farmers in relation to available markets, have put thousands of farmers, utilizing marginal or submarginal land in the Appalachians and lower St. Lawrence river districts, in a precarious situation. This also applies to farmers in some other parts of Quebec. The final result is that those farmers are not in a position to adjust their farm operations in such a way that it enables them to compete in the marketplace.

With the expectation of increasing population in Canada, coupled with rising income, there will be an increasing consumer demand and a rising consumer preference for superior foods. As a matter of fact, the Gordon Economic Commission in its preliminary report forecast a rise in the domestic demand for food, and especially for red meats. From a farming point of view, the result of that will be that much of the marginal land may be found to be suitable for grass farming on an extensive basis and will be utilized for beef production. But all this means important readjustment and rehabilitation in the building up of self-supporting farm economic units. There will be a need for the application of new farm management techniques, and special credit help may be needed in the adjustment process. In some instances there will be need for a combination of agriculture and rational use of a woodlot, or use by the community of a specified forest limit located so as not to interfere with regular family life.

There is a need in the province of Quebec for an overall conservation policy applied to land, forest and water resources. The water supply has become inadequate in most parts of the provinces. The water table has lowered to a

dangerous point in the upper St. Lawrence valley, our best farming area. In other areas water is a serious cause of erosion.

It would seem to me that the first step to be taken would be a comprehensive program of reforestation of denuded mountains and land unsuitable for agriculture. In the upper St. Lawrence Valley for instance, at certain times of the year farmers suffer from losses due to high dry wind, and this would suggest that there is need in that valley for the reforestation of thousands of acres. I would say that there is also a need for the damming of rivers to assure water reserves. A great effort has been made with regard to drainage works designed to get rid of surplus water, but we must realize that there is a real need for storage dams to control the water flow, and thus assure an adequate supply of water at all times of the year, and remove the threat of a shortage of drinking water on the farm by maintaining the water table at normal levels.

Any programs of reforestation and conservation of water must be based on the classification of soils, hydrographic research and so forth. We do recognize that the development of natural resources is the responsibility of provincial governments, but both governments, federal and provincial, have some responsibilities with regard to water conservation. Both have responsibilities and interests in the welfare of agriculture and the whole population. We already have the greater part of our soil classified, but the job is not yet finished.

The magnitude of the undertaking is tremendous. Researches will have to be made in many fields before action can be taken. The problem is urgent and it surpasses by far the possibilities of the individual farmer, or the organized farmers. There is already co-operation of federal and provincial authorities in the help and guidances given to farmers through much supplementary legislation and federal experimental farms. We think that in the present circumstances we are justified to ask for maintaining and increasing co-operation between federal and provincial authorities to help farmers go through a period of readjustments and difficulties.

The CHAIRMAN: Any questions?

Senator BRADETTE: Mr. Lemoine, is it not true that in Quebec in many districts bush operations are part of the functions of the farmers there?

Mr. LEMOINE: Bush operations?

Senator BRADETTE: Yes.

Mr. LEMOINE: That is true in the lower St. Lawrence river district especially, and on the north shore of the St. Lawrence river, but in the main farming area, where productivity and effectiveness are most developed, it is straight farming.

The CHAIRMAN: What percentage, did you say, of those who make less than $2,500 have recourse to lumbering?

Mr. LEMOINE: About two-thirds of our farmers sell less than $2,500 worth of farm products, and that means that you will find, in that two-thirds, people who will have incomes from lumbering—working in the lumber camps—or having jobs in industries in cities close to their farms.

Senator GOLDING: What size of farms do you include in that two-thirds?

Mr. LEMOINE: I would think that the average size of farm as of 1951 was over 100 acres,—about 116 acres. I think also that the size of farms ranges, generally speaking, from 60 acres to 150 and 200 acres. To my mind the size of the farm is not of the first importance; it is much more a question of the quality of the land.

Senator HOWDEN: What is the popular type of cow on these farms?

Mr. LEMOINE: All types. Maybe not the best, but the biggest—the Holstein down to the Jersey.

Senator HOWDEN: The Holstein will give a lot more milk than the Jersey.

Mr. LEMOINE: Yes.

Senator HOWDEN: But it will not be quite as rich.

Senator HORNER: You stated that on two-thirds of the farms the income is less than $2,500. What would be the general picture with regard to the upkeep of farm buildings and equipment? Has that deteriorated? Are the buildings becoming run down or are they being built up? What is your opinion in that regard?

Mr. LEMOINE: I will answer your question this way. There never were large agricultural operations on those farms. The farmers just had small herds of cattle, and so on, with the result that the buildings were not too costly to begin with. For this reason I would gather that the farmers have taken reasonable care of them. This raises the problem of whether in some areas there should be more utilization of woodlots to increase the income of these farms. It also raises the question of whether it would be advisable to consolidate farms, to build up economic units so as to have larger sized farms. We think, too, that in some parts of southeast Quebec and the lower St. Lawrence valley there could be successful beef-producing farms. It is a question of farm management and reorganization of the entire farming set-up.

Senator BRADETTE: Does the income of $2,500 a year include wood on the farm that is used for fuel by the farmer himself? Does it also include the butter, milk and other farm produce used by the farm family itself?

Mr. LEMOINE: Oh, no.

Senator BRADETTE: What would be your estimate of what the average family in Quebec would consume of their own produce?

Mr. LEMOINE: It is an accepted fact that we usually appreciate at $500 the value of fuel and food products used on the farm, including the value of the rent of the farm house and so on. It is usually appreciated at $500, and I would gather that that is a pretty accurate appreciation because it is accepted by the income tax branch.

Senator BRADETTE: But it does not compare, of course, with what urban dwellers pay for fuel, rent, and so on, which is much higher in the cities.

Mr. LEMOINE: But you must understand that the value of housing in urban communities is much higher than in farming communities.

Senator GOLDING: On farms with low incomes, what produce do they sell to make up that amount of $2,500?

Mr. LEMOINE: Mostly dairy products.

Senator BRADETTE: I would like to pursue my question a little further. I have seen friends of mine leave their farms to go to the cities but because of the high cost of living in the cities things did not go too well with them. I think this figure should be raised from $500 to at least $1,000.

Mr. LEMOINE: I will not argue with that. I will readily accept that it is worth $1,000. At the same time I would ask you to agree with me when I say they have to pay taxes, even if they have a small operation, and they have to buy fertilizer and they must repair their buildings and fences and look after their pasture land and so on. After they have done all this it has cost them at least $500 before there is anything in their pocket books to live on.

Senator BRADETTE: It comes to the point where the urban people criticize the Department of National Revenue for being easier on the farmers than they are on the urban dwellers. Although I am a farmer myself, I think the urban dwellers have an argument there.

Senator BARBOUR: Have you a provincial farm loan board in Quebec?

Mr. LEMOINE: Yes.

Senator BARBOUR: What interest rate do they charge?

Mr. LEMOINE: The interest rate is 2½ per cent. Actually it is 4 per cent altogether—the interest rate and amortization.

Senator BARBOUR: Is it for young people only, or for any farmers?

Mr. LEMOINE: For any farmers who qualify.

Senator LEGER: What is the acreage of the low income farm under cultivation?

Mr. LEMOINE: The average acre of farms in Quebec is 60 to 150 or more, but that is the size of the farm; the acreage under cultivation of low income farms would not go very much over 60 acres.

Senator MCDONALD: Is there evidence that the farm soils are being improved, that is, from the point of the increased use of lime and fertilizers, in recent years? In your answer would you also give us an idea of the percentage of farmers who have their farm soils analyzed to find out in what respect their soils are deficient?

Mr. LEMOINE: It is very difficult to give you a very accurate answer. I know that in Quebec in the last 10 years thousands and thousands of farmers have had their soils analyzed, but in what percentage it is very difficult to answer unless I had some figures from the Department of Agriculture of Quebec.

Senator MCDONALD: Has there been any increase in the use of lime and fertilizers?

Mr. LEMOINE: Oh, yes, definitely; in the last 10 years there has been a big increase in the use of lime, the use of which has been multiplied by five. The increase in the use of lime has increased faster than the use of fertilizer; lime is much less costly than fertilizer.

Senator HAWKINS: Could you envisage in a large percentage of those marginal farms the possibility of an integrated forestry in the farming economy?

Mr. LEMOINE: Oh, yes, in a very appreciable percentage of them.

Senator HAWKINS: And is there some movement towards that from the better utilization of the woodlot by the farmer himself?

Mr. LEMOINE: Oh, yes. The farmers are aware of the situation, and they are ready, first of all, to help themselves.

Senator HAWKINS: And there is some effort on behalf of the Government and organizations to give guidance in that?

Mr. LEMOINE: Well, the effort at this time is to have our government recognize the problem and help the farmers.

Senator HAWKINS: These farms that are sub-marginal, I suspect, and tell me if I am wrong, have generally more acreage and will be in the poorer areas?

Mr. LEMOINE: Yes; but when we want to integrate farming and forestry operations in one farm units and to make it economical the problem we have to face is the fact that in those areas most of the commercial wood has been cut, whether for pulp or for lumber, and therefore this is a very difficult problem, because they have to go very far from home to find commercial wood that would be used.

Senator HAWKINS: There is not very much development, then, in the potential of these areas they own freehold, for that is what I am talking about now. I do not think a lot of people appreciate the potential production of 100 acres of woodlot when it is properly cared for.

Mr. LEMOINE: That is right. There is an awakening of that fact.

Senator HAWKINS: There is an awareness of it?

Mr. LEMOINE: Yes.

Senator HAWKINS: Thank you.

Senator HORNER: You are no doubt acquainted with the movement at Hawkesbury. They are setting up a model farm out at Harrington, as far as Grandville, south of there, and are encouraging the farmers and advising them with regard to woodlot protection in order that they may have a perpetual supply of wood to keep their mill open.

Mr. LEMOINE: Yes, I have heard about it, but I do not know much about it.

Senator HORNER: It is a very interesting venture.

Mr. LEMOINE: Mr. Chairman, with regard to that discussion about combined farming operations with the use of woodlot as a supplementary income, I would like to say that we do feel that this method could be used for thousands of farms in Quebec. On the other hand, we have realized that there is a tendency to try to generalize too much on that possibility. We have also great possibilities of rehabilitation of land for farming, as farming. Again I would like to emphasize the fact that there is a great possibility of beef producing farming in many of these areas of marginal land in Quebec, which are marginal land, as far as grain production is concerned. But the land may be highly suitable for grass planting.

Senator SMITH (*Kamloops*): I wonder if the witness would give us an idea of whether the young folk on the farms are taking training at agricultural schools, or extension courses, and if there is an improvement in that direction; or are they losing interest and going to industry?

Mr. LEMOINE: Well, to answer your question, senator, I will divide my answer into two parts. First of all, with the development of industries, and the possibilities of jobs in those industries, a greater percentage of young people will care less for farming and go to work in the industries. The second part of my answer is that we do have 17 vocational agricultural schools, which train young men as farmers, and these men are supposed to go back on the farm to make their living as a career. There is an average of 57 students at each school. This means that a few thousand young people will be starting farming every year. With the tendency to larger farms and less farmers, it means that we do think that this next generation of young people with vocational school training will be part of those who will replace their fathers in the years to come.

Senator TAYLOR (*Westmorland*): Does that not seem a very small proportion of boys on the farms who are studying agriculture?

Mr. LEMOINE: Well, it means a few thousand. It is a very small proportion, but that does not mean they are the only ones who will acquire some knowledge of agricultural science. There is an awareness among young people on the farm that in order to make a fair living out of farming they must have more knowledge than was required in previous years; they know that they must be familiar with agricultural science.

Senator LEGER: Are these low income farms mechanized at all?

Mr. LEMOINE: Some of them are, but not to any extent.

Senator WALL: Mr. Chairman, without entering into the problem of the responsibility of the various agencies which may help, would the witness explain a little more specifically what he understands to be the problems of readjustment which farmers have to face?

Mr. LEMOINE: If I understand the question rightly, the answer would require me to make another speech.

Senator WALL: Let me pinpoint it. I gathered from your remarks an inference that a good deal could be done by the individual farmer to readjust to modern trends and modern means of farming. Could you elaborate on that a bit for me?

Mr. LEMOINE: For those farmers who have best succeeded in adjusting themselves up to this time, they have realized that regardless of whether their farming operations embrace truck gardening, canning crops, or other extensive crop production of milk for factories, or the raising of beef cattle, they have first of all to enlarge the size of their farms. This means that some day a farmer has to buy his neighbour's farm. That presents the social problem as to where the neighbour will go. Is he prepared to make a living in the city?

A second problem is that of the need for credit. The man on the larger farm faces a labour shortage, and it becomes necessary for him to make more capital investment for mechanization purposes. Consequently, there is a greater need for him to have a better knowledge of farm management. This means he needs more help from government agencies.

All these changes lead to a further problem to be faced by the municipalities. Larger farms mean fewer farmers to pay municipal taxes and taxes for the support of schools, the maintenance of roads and so on. That problem is, as I say, at the municipal level.

Senator MCDONALD: Could you tell the committee, please, if trained men are available to help the marginal farmers in farm management?

Mr. LEMOINE: Yes, we have at least 100 agrarians working for the Department of Agriculture, who are available to any farmer who asks for their help.

Senator TAYLOR (*Westmorland*): I should like to ask the witness one more question. In the modern trend and technique of agriculture, which adds to the complexity of farming at the present time, do you agree that the big farming operation requires more training and business ability than the smaller farm operation? For instance, if a man who has been farming 50 or 75 acres, enlarges it to 200 or 250 acres, his operation very quickly becomes more complex. In those circumstances do you not think the farmer requires a good deal of additional training to make his operation successful?

Mr. LEMOINE: Yes. This may well be one of the most difficult problems to solve, namely, to ensure that the farmer of tomorrow will be a well qualified and trained man to meet his management problems. We all know that within the next few years the number of acres under cultivation will not increase very much, but the number of farms in Quebec, and in Canada generally, may decrease. That means that the man who will still be farming at that time will have a bigger farming operation and will be involved in more intensive production; if he is to carry on successfully, it will require a great deal more knowledge and ability than if he were managing a small farm. To me, this is one of the main problems we have to face with respect to the future of agriculture.

The CHAIRMAN: Are there any further questions? If not, thank you Mr. Lemoine.

Our next witness is Mr. E. M. Taylor, Deputy Minister of Agriculture for the province of New Brunswick.

Mr. Taylor, will you tell us something about your experience in agriculture?

Mr. E. M. Taylor, B.S.A., Ph.D., Deputy Minister of Agriculture, province of New Brunswick.

Mr. Chairman and honourable senators, I was born on a farm in New Brunswick, and for the past 40 years have been engaged in various aspects of agricultural work in a departmental way, including services with the

provincial Government of New Brunswick and with the Government of Canada, at the Experimental Farm. Provincially, I was for a number of years Director of Field Husbandry Branch, which includes crops and soils, and with the Farm Settlement Board, and more recently I have been Deputy Minister of Agriculture.

On behalf of my minister, I wish to thank you for this opportunity to appear before your Land Use Committee. Perhaps I could best illustrate my opening thoughts on land use by the use of a couple of maps of New Brunswick which I brought along. Would that be appropriate Mr. Chairman?

The CHAIRMAN: Yes, certainly.

Mr. TAYLOR: The map which is on the board depicts the Crown land areas in the province of New Brunswick, coloured in green. The settlement of farm lands and utilization of farm lands extends around the coastal areas, in the valleys, along the section of the Bay of Fundy, and in the valley of the Saint John River and in the areas in Charlotte and York County, extending up the river areas, and the same in Carleton and Victoria. The area owned by the province, which is largely in forest land, is substantial, as you can see. The greater number of the farms are relatively small and by limitation of the amount of land available for agriculture and the type of our land, it is necessary that we make the greatest and best possible use of our farm land.

In connection with farm land utilization we have carried on for a number of years, in association with the Federal Department of Agriculture, a system as soil surveys. Before leaving New Brunswick to come to Ottawa today I asked our soil survey group if they would illustrate pictorially the types of land and the qualities of land that we have in New Brunswick for agricultural purposes. This second map which I am referring to is the one they prepared for that purpose. The different colours on this map depict the different classifications of land as found by surveys made to date. The whole province has not been surveyed; about half of it has been covered by soil survey. This portion in the centre of the province has been surveyed, but the report has not been published. The south and western section has been largely surveyed. The northern and northeastern part has not been surveyed, and the same applies to the central part, which is forest. The type of survey carried on, Mr. Chairman, in the areas which are farmed is what is known as a detailed reconnaissance survey. In the forest areas the detail is not so great, so the areas shown by the different colours are approximations based on reconnaissance only and not on detailed surveys.

The very good land is illustrated by the colour green.

The CHAIRMAN: Is that along the Saint John river?

Mr. TAYLOR: That is pretty much in the Saint John river area. The good land extends along the same area also further south to the southwestern corner of the province, and in the Kennebecasis valley, and in the part of Westmorland county and in a bit of Albert, and the northern section of the province, in Restigouche and Gloucester counties.

The fair farm land is depicted by the red colour which includes part of Westmorland, Kent, a portion of Queen's, King's, Sunbury and Northumberland, with some sections in York, Carleton and Victoria, Madawaska and Restigouche counties.

The poor land is depicted by the blue colour.

The CHAIRMAN: Is that around the Miramichi?

Mr. TAYLOR: The Miramichi, yes.

The CHAIRMAN: Is it north of the Miramichi?

Mr. TAYLOR: That is right.

Senator TURGEON: When you use the terms "fair land" and "poor land", are you referring it to agriculture?

Mr. TAYLOR: Yes. The land so described may be effected on account of being rolling land, its hilliness, texture of soil, its rockiness and so on, as well as drainage.

Senator HORNER: And any one farm of 100 acres may contain all of these?

Mr. TAYLOR: Yes, but you may get it in blocks as well.

Senator MOLSON: Is that poor land all along the Bay of Fundy?

Mr. TAYLOR: Sometimes we disagree with our technical experts in their classification. There is some very good land here in the Peticodiac valley, and this area here is rolling and hilly, and not extensively farmed although there are some very good farms in the Saint John area and in the Saint Martin's area, which is near Saint John. When you get down to Charlotte county, this is our blueberry area. That is called poor land but it is excellent for blueberries. The same is true up here in the Tracadie area.

Senator HORNER: Are blueberries a cultivated crop?

Mr. TAYLOR: The blueberries that I refer to are natural stands.

I have not prepared any manuscript Mr. Chairman, so I am comparatively unprepared.

The CHAIRMAN: You are doing fine, just continue.

Mr. TAYLOR: 78 per cent of our province is in forest land. That is one of the main uses.

Senator MCDONALD: What part of that is crown land?

Mr. TAYLOR: Approximately a little less than 40 per cent, I would say around 7 million or 8 million acres. The land which is pictorially illustrated on this map as very good is estimated at a little over 1 million acres, and 77 per cent of this is farmed. In other words, 77 per cent of our land which is classified as very good is owned and operated as farm enterprises.

2,700,000 acres is classified as good land, and 85 per cent of that is utilized as farm land and farm forest land.

Of the fair land, 7 million acres, or 12 per cent is utilized for agriculture.

Of the poor land, 5 per cent is utilized for agriculture. These figures illustrate to you the fact that our very good land and our good land are being quite extensively used for agriculture. Admittedly there is some remaining land available for agriculture, but it is forested—most of it very well forested —at the present time.

Those limitations of good land have to be taken into consideration continually in our departmental policies, and we have a number of policies designed to make the greatest and the best use of the land that we have. Reference was made in an inquiry of the previous speaker to the services rendered by the department in his province. We in the province of New Brunswick have 16 agricultural offices variously scattered throughout the province, which we call our extension branch offices, and the staff operate their technical services to the farmers in the various areas. In addition thereto we have a number of crop specialists and soil specialists, who are located in the central part of the province—in Fredericton—and who service the area provincially on a specialist basis with respect to crop, livestock and poultry production. In addition thereto we have an agricultural engineering branch which is devoted to the subject of land use, land utilization and land improvement. This organization is staffed with agricultural engineers whose services are available to farmers on the basis of recommendations in regard to land use, tiled drainage, surface drainage, soil conservation, and such like, in the form of land terracing and water diversion, removal of stone piles from fields, the building of farm roads, and so on. This department has a machinery service which services farms on a service basis of so much per hour for their operation. That service is not self-sustaining, it is a contributory service by the province to farmers to defray the

balance of the cost, and the cost is such that we think it enables a great many farmers to make better use of the land they have and develop and conserve it to the best possible extent.

Senator HORNER: Does that consist of ditching machines and—

Mr. TAYLOR: Yes; we have a line of tile drainage machinery and ditching machinery, and bulldozing for land clearing, and they do a certain amount of land clearing on an hourly charge basis. In addition thereto our engineering branch renders services to farmers in regard to farm buildings and such like.

Another aspect of our soil utilization and service policy is our agricultural limestone policy, which is a joint one with the federal Department of Agriculture. By reason of the fact that practically all our soils—I would say 95 per cent—are acid in reaction, the use of lime is very important to land use and land conservation and land utilization—crop returns.

Senator HORNER: Have you lime in the province?

Mr. TAYLOR: Oh yes, we have an abundance of lime in the province, and it is readily available to farmers. Our cost delivered to farmers at the nearest railway station is $2.50 per ton under federal-provincial policy.

Senator HOWDEN: Do you burn your own lime?

Mr. TAYLOR: No, it is ground; it is ground rock.

I did not make any reference to climatic conditions. We have a climate very much like you have in Ottawa, with an abundant rainfall. Rainfall averages around 40 inches per year, and some years more than that, and not too many years when it is much less than that. The heavy rainfall which we have results in a considerable leaching of fertility from our soils. That is one of the reasons we have to use so much fertilizer in eastern Canada, and it is one of the differences between east and west. To make sure of a crop in the east we have to fertilize, because over the centuries a great deal of fertility is leached out by our rainfall,—which does not happen in the dry areas, where they exist. We have used as high as 100,000 tons of lime per year. While, apparently, that is down to 30,000 to 35,000 tons, we should be using up to 100,000. We use 65,000 to 75,000 tons of fertilizer per year for crop production, and that is a major item of costs, and one which we have to provide for.

The type of farming carried on in the province is, generally speaking, what we refer to as the mixed type, with some specialization in areas adjacent to the larger cities,—Moncton, Saint John, Fredericton and so on. Milk production, of course, is one of the livestock specialties. In the St. John river valley (indicating an area about 100 miles north of Saint John) is a specialized potato-growing area. In the central part, here, we have a bit of specializing in orchards—apples—and in the lake country here, small fruits and strawberries. In the eastern section here we have our marshland areas. They are grassland areas; but once the land is cleared of forest— and forest is our natural and primary growth—and limed for adequate fertility, it is excellent grass-producing country, and grassland is the basis of our livestock production.

Senator HORNER: Have you a record of the production of the major agricultural products, such as potatoes, and the revenues received by the farmers?

Mr. TAYLOR: That is all published in the annual reports issued by the bureau of statistics. I do not know that I can give you the figures.

Senator HORNER: Just roughly.

Mr. TAYLOR: Roughly speaking, the total value of our agricultural crops for a year runs from $60 to $65 million. In 1953 our agricultural figure total was $61¾ million and in 1955, it was $63¾ million. These are approximate figures. Our operating farm expenses were over $35 million in 1953 and over $36 million in 1955. Does that answer your question in part?

Senator BOUCHER: Approximately how many acres have you of good farmland in the province?

Mr. TAYLOR: The occupied farmland at the present time is 3,470,000 acres. That is the total farmland. Of that, one million acres are under cultivation. So there are 2,470,000 acres not under actual cultivation.

Senator BOUCHER: Two-thirds of your farmland is not under cultivation?

Mr. TAYLOR: That is right; unless it may be under forest utilization.

Senator TAYLOR (*Norfolk*): What are they doing with regard to reforestation?

Mr. TAYLOR: There has been no real active policy on reforestation established as yet. There has been some exploration into the field of reforestry, but in our country the land reforests itself pretty rapidly. The species, of course, are voluntary and we have not much choice as to what nature does for us. Some of the species are not the most desirable, but consideration is being given to finding ways and means of developing some reforestry on the basis of planting and selection and forest management, and so on, with a view to improving the species as the years go by.

Senator TAYLOR (*Westmorland*): I can give a practical illustration of natural reforestation. When I was a young man of twenty-one years of age I planted some spruce in a field of buckwheat, and just six years ago they were cutting eighteen inch logs off that land.

Senator HAWKINS: What was the species again?

Senator TAYLOR (*Westmorland*): Spruce.

Mr. TAYLOR: We have plenty of rainfall and the seeding is general and the land does reforest itself, but unfortunately it is not always of the right species.

Senator BRADETTE: Is it true that in New Brunswick most of your white and red birch has disappeared through disease?

Mr. TAYLOR: We have lost a lot, yes.

Senator HORNER: Have you been able to get rid of the disease that was killing the birch?

Mr. TAYLOR: No, nothing much has been accomplished to that end. We have had a serious outbreak of bud worms in our conifers but in the past few years we have been spraying the trees in an attempt to control these bud worms.

Senator HORNER: Out west we used to have a lot of tamarack. What do you call that here?

Mr. TAYLOR: The hackmatack.

Senator HORNER: Some thirty years ago practically all the tamarack died out, but there is a wonderful growth of them coming on now. They seem quite healthy.

Mr. TAYLOR: I think the natural parasites take care of the insects causing damage to tamarack and some day when they get plentiful enough they might do damage again. But probably the parasites would take care of the situation again. Now, Mr. Chairman, I don't know whether I am following the lines I should or not.

The CHAIRMAN: Oh, yes.

Mr. TAYLOR: I have referred briefly to land use so far as crops are concerned, and especially with regard to our major crops. Potatoes are the crop which we export. Periodically in years gone by we have exported some hay and even today we may export a little. We import feed grains. We have no specialized processing crop industry to any extent. Within the past two or

three years there has been developed the beginning of an industry for the processing of fruits and vegetables. There are prospects for further advancement in this development during the current year.

Senator HORNER: Is your potato chip industry going strong?

Mr. TAYLOR: That business is going ahead full-time. We can always process potatoes in some form, for we always have them.

Senator BARBOUR: Mr. Taylor, would you tell us about the care you are taking to prevent forest fires, and so on?

Mr. TAYLOR: At the present time we have a good system of fire protection, which has developed over the years. Large areas of these forests are leased by companies which operate pulp and lumber interests. These companies, in co-operation with the provincial Department of Lands and Mines, have developed pretty good radio and telephone communications in these areas for fire protection. It is true that great damage was done years ago to our forests by forest fires, but that damage has been greatly reduced in recent years.

Senator HORNER: Although you have heavy rainfall, you do get some dry periods too, I understand?

Mr. TAYLOR: Oh, yes.

Senator HORNER: I often thought that in large forest areas it would be advisable to have some large open spaces that would form a sort of fire break.

Mr. TAYLOR: As I say, we have been very fortunate in recent years in having a very minimum of losses from forest fires.

Senator HORNER: The helicopter has been a wonderful aid in protection against forest fires.

Mr. TAYLOR: Yes. I have referred to the crop feature of our land use, and the crops we use are hay, grain and such like, which form the basis of our livestock industry. While we do not have a livestock industry that is comparable to that in other provinces, we do have a good one. Our livestock policies are administered departmentally, some by the province, some by the dominion and some by joint federal and provincial co-operation. The bulk of our cattle population is of the dairy type, but increased interest is being manifested in beef production. I think we can anticipate considerable development in the production of beef cattle in our marshland areas in our specialized potato area of the St. John River where very good pasturage and grassland is available. The same holds true of other sections of the St. John Valley.

Senator HORNER: I suppose the same thing holds true as in other provinces, and that one of the reasons there is a greater interest in beef production than in milk production is the fact that it is difficult to secure help at the present time.

Mr. TAYLOR: That is one of the influences which has been in effect in recent years.

Senator HORNER: I think you will find that milk prices will eventually increase to offset the advantages gained by beef producers.

Senator MCDONALD: Mr. Taylor, you mentioned marshlands. There has been a great amount of improvement in draining and reclaiming marshlands. I wonder if the farmers in your province are making good use of that land. That is, are they increasing their production of beef and dairy cattle?

Mr. TAYLOR: I would say that this land is still being reclaimed. The first reclamation was from the sea, as you know. The reclamation has not advanced to the final stage yet. And back of that again there are other problems, drainage, and so on, which have to be worked out, and they are in the process of

being developed at the present time. There is evidence that good use is going to be made of these lands as they are developed and the development is completed.

Senator McDONALD: There is a tremendous territory in the east of marshland which could be developed for the production of beef.

Mr. TAYLOR: It was utilized for that purpose 100 years ago. You and I cannot recall that, of course, but nevertheless we shipped cattle by water to Great Britain from this area.

Senator McDONALD: I remember when Senator Copp wanted me to go over the marsh area which was just on the border between the two provinces there, and he said that he remembered, when that land had been properly drained, that as a boy grass was growing there up to his middle, but it has since been allowed to get clogged by improper drainage, and I would like to know if we are getting back to the stage of proper drainage that we will be able to increase production there.

Mr. TAYLOR: That stage is being worked out at the present time.

Senator McDONALD: Can you see good progress being made in the general improvement of soils of the farm lands throughout the province?

Mr. TAYLOR: Yes, the production per acre is much greater than years ago; that is brought about by the use of lime and fertilizers. Even though the acreage of farm land is shown by the census reports as having decreased in the last 40 or 50 years I think production is even being increased—has increased during that period, which implies better management of land, and so on.

Senator McDONALD: In speaking of your staff, you mentioned the extension work you are doing. I know they are doing great work, but you did not mention particularly those that were employed in the farm management, that is, showing the marginal farmers, if you will, how to carry on a better system of farming. Do the extension men do that in your province?

Mr. TAYLOR: They do it to the best of their ability. I referred to the number of men. We have 16 district offices. Actually those men along with our crop specialists made 40,000 calls last year, and that is a fair amount of service. Maybe they made too many calls and did not spend enough time, I do not know, but they do endeavour to give farm men direction; and they do.

Senator McGRAND: Would you say something about farm income in the province of New Brunswick as compared with other provinces?

Mr. TAYLOR: Well, it is not as high as the other provinces. My figures are not up to date. I think I have some figures here. The farm cash income of New Brunswick farmers in 1951 was $48.2 million. The cash income per person engaged in agriculture in New Brunswick in 1951 was $1,811. Canada, $3,413.

Senator McGRAND: It is below the average?

Mr. TAYLOR: Yes; that is just a little better than half. I have given the figure per person engaged in agriculture. I will now give it to you per farm. New Brunswick is $1,811, and Canada $4,539. Those are available for anyone who wants to see them.

Senator SMITH (*Kamloops*): Is that the per farm figure?

Mr. TAYLOR: Yes, it does not sound right to me, and it may be a typographical error; however, those figures are available, and this is the only reference I have here.

Senator McGRAND: I have another question, which I did not have an opportunity to ask the former witness, who stated that an amount of $500 on $1,000 was a fair amount for a farmer to get in foodstuffs to live, and so on—the fact that he lived on a farm. What do you think about that?

Mr. TAYLOR: I have some figures here. "Income in kind, 1955": $17,405,000. If that is divided by 26,000 the result is a little better than $600 per farmer.

Senator McGRAND: Does that include rent?

Mr. TAYLOR: I doubt if that includes rent. Who is here from the Bureau of Statistics?

Dr. WALSH: That is the only figure we know in the Bureau of Statistics—"Income in kind."

Mr. TAYLOR: I do not know if that includes rent or not.

Senator McGRAND: That is the gross from the time the farmer takes his produce in food, his meat and dairy products, and so on, and he takes off $500 of that?

Mr. TAYLOR: No.

Senator McGRAND: About a quarter, would that be fair?

Mr. TAYLOR: Pretty small.

Senator LEGER: Would you tell us what the average acre of our farms in New Brunswick is?

Mr. TAYLOR: Well, the total acreage is 3,400,000, divided by 26. That is about 150, is it not?

Senator LEGER: Would you say half of that is in woodlots?

Mr. TAYLOR: Oh, yes, it is more than that. I am speaking from memory, now, right along the line, because I have not prepared anything in brief. I think the improved average acreage per farm is about 38 acres.

In connection with the maintenance of our farm operations and land use I referred briefly to the livestock industry, and did not make any comments on it, and I would like to say that we have a number of policies for the development and maintaining of the industry. We have an up to date insemination service for livestock breeders, and render a certain amount of assistance to pure bred stock breeders, for purchase of improved sires, and give assistance to agricultural societies for purchase of sires; but these latter policies gradually decrease as artificial insemination becomes more general. We have a number of policies for the promotion of sheep and swine, poultry, and such like; and our livestock organization and producers are very well serviced. We have one large co-operative service in the Maritimes—the Maritime Co-operative Services, which renders a very great service to livestock producers. We have two packing plants in the province; and we have a hog marketing board which takes care of the marketing of our hogs. We have 25 plants for manufacturing butter and ice cream, or both. We have 5 cheese manufacturing plants; cheese is marketed through a cheese marketing board. Fluid milk marketing is regulated under our Dairy Products Commission; and cream production is handled by the Cream Marketing Board. The cream and dairy products of these organizations are serviced by co-operatives and they are very well distributed over the province for service to the producers.

I made brief reference to our horticulture. Our apple production is largely for our own use; our export is very limited. Periodically strawberries are exported outside of the province.

I referred to our Soil and Crops Division as to its lime policy. We have for many years had a policy designed to promote utilization and improvement of grasslands, particularly with reference to pasture and hay production as

related to livestock production. We render a soil testing service to our farmers, and conduct a soil survey service under the supervision of the Experimental Farm System, under the federal Department of Agriculture.

Senator HORNER: You do not have a Farm Loan Board. How do your farmers find the money to improve their farms?

Mr. TAYLOR: That is a very good question; money is sometimes hard to find. There are three agencies of farm credit in the province. The province has operated for the past 45 years a Farm Settlement Board, which embraces a policy designed to assist young farmers in the purchase of farms for settlement. That is not a policy whereby persons can finance or re-finance their farm operations; it is purely a buying and selling transaction, under a sales and purchase agreement, whereby the settler has up to 30 years to pay.

Senator HORNER: It is taken from a revolving fund—when one young man pays, that money helps to start another?

Mr. TAYLOR: Yes. Under our present policy we can buy farms up to $10,000 for one man, or $15,000 for a partnership, based on 25 per cent down payment on the purchase price. In addition thereto we can loan up to $2,500 for the purchase of livestock and machinery.

Senator HORNER: At what rate of interest?

Mr. TAYLOR: The rate of interest varies: 3 per cent up to 15 years for a land loan, and 5 per cent for more than 15 years; 4 per cent up to five years on machinery, and 5 per cent for more than five years.

Senator SMITH (*Kamloops*): Would you tell us what the situation is in your province with respect to facilities for training young people in scientific techniques?

Mr. TAYLOR: May I finish my answer to this present question first?

In addition thereto the Farm Loan Board operates in the province and assists the farmer in the re-financing of his farm mortgage. That, as you know, is carried on under the Canadian Farm Loan Board Act. I cannot off hand give you the extent of re-financing that has been done, but it is a considerable volume, and is of great assistance to the farmer. We would like to see the policy loosened up a little and made more flexible with respect to the availability of loans; we should also like to see more consideration given to higher valuation on farms in keeping with the times, and perhaps a little higher percentage of loan value of farms.

Senator HORNER: Would you hazard a guess as to the record of repayment? Have there been any losses, and if so, to what extent?

Senator TAYLOR (*Westmorland*): The east is honest.

Senator HORNER: I do not doubt that they are honest, but I might doubt their ability to pay.

Mr. TAYLOR: They do very well at it; they pay their bills. In addition thereto we have the service of the Farm Improvement Loan Act through the banks.

Senator MCDONALD: If Senator Smith will allow me, while you are on the question of farm settlement, I should like to mention that while riding the train along the North Shore recently I noticed that a few places which were once inhabited are now vacant. Why did those people leave? Was it because they were placed there during the depression and were just waiting for something else to do, or was it that the soil was poor?

Mr. TAYLOR: You are referring to the new settlement?

Senator MCDONALD: Yes.

Mr. TAYLOR: That settlement was born during the depression; those people came originally from the coastal areas where their occupation was primarily fishing. When they moved away from the sea they had to adjust themselves. That land was heavily forested when they went there, and at great effort it was cleared. They did clear some small holdings on it, but unfortunately the area suffered fire loss shortly after they went there; they lost a good deal of the value of their wood lots which would have been of assistance to them during subsequent years. Those are the factors which caused them to move, plus the high rate of employment in industry elsewhere.

Senator HORNER: And perhaps also the improved condition in the fishing industry?

Mr. TAYLOR: Yes.

Senator MCDONALD: If they had had a farm background, could they have made a living on that land?

Mr. TAYLOR: Well, our forebearers did.

Now Senator Smith, what was your question?

Senator SMITH (*Kamloops*): I wondered if you would give us the situation in your part of the country as to the facilities for training young folk in modern scientific techniques, and to what extent they are being used.

Mr. TAYLOR: We have four agricultural schools which are devoted to the services of farmer's sons for practical courses in agriculture, farm management and farm operation. Those are run on a two-year basis in three schools and on a three-year basis in a fourth school. Those schools serve a total of about 150 boys a year, or perhaps more. In addition thereto we have a great many boys who take advantage of the facilities of the Nova Scotia Agricultural College at Truro, and the Macdonald College in Quebec; some go to the Ontario Agricultural College at Guelph. But the practical farm courses are provided by the four schools which I mentioned, which are scattered over the province, and which give a two or three-year course.

Senator MCGRAND: In spite of the generous efforts on the part of the provinces in training the youth, and in establishing credit and providing other facilities, to what do you attribute the general state of depression in agriculture which exists in the provinces? Can you give us an idea of the number of people who each year leave the land for other occupations?

Mr. TAYLOR: In reply to your first question, doctor, the agricultural revenue in New Brunswick, in Canada and even in North America and in a good part of the world today, has been at a low ebb in recent years compared with other enterprises. Costs of operations have been going up and apparently are still going up. That, associated with the high level of employment in other industries, is the basic reason for that condition.

Senator HORNER: It is the old story—the prices the farmer receives for what he has to sell does not keep pace with what he has to pay for what he buys.

Mr. TAYLOR: What was the second part of your question, doctor?

Senator MCGRAND: I asked about the number of people who each year leave the land for other occupations, and also, I might ask, what is the economic value of that land after it has been deserted by the farmer?

Mr. TAYLOR: I do not think I can give you an estimate of the number of people who annually leave the farms. The Bureau of Statistics has made some estimate of it on a basis of a ten-year census. Any number I gave would be a pure guess.

With respect to the land being vacated, I think it will ultimately be taken up by adjoining land owners, when it is offered for sale. While some of this land is not being used for farm operations, it is being lived on; people live in

the country, work in town, and comute between home and job. To that extent it is not being used agriculturally. But, as I say, some of that land will be picked up when it is offered for sale, and will be absorbed into a larger farm unit. I think that is one of the steps we can look forward to in the larger farm operation. I think reference was made by somebody to more intensive management and so on. Certainly there becomes involved the cost of equipping these larger units. As presently operated our Farm Settlement Board policy is basically designed to enable farmers with small holdings to acquire larger holdings.

Senator INMAN: How quickly does farmland deteriorate once it ceases to be farmed?

Mr. TAYLOR: Well, deterioration means a lot of things. It may not deteriorate so far as the land is concerned if it is in grass. It will not erode if it is in grass, but nature will cover it up with growth. There may be no deterioration in the land, but if it grows up in bushes, elderberries or water-rushes, it is useless—the land has really deteriorated then from the utility point of view.

Senator CRERAR: Mr. Chairman, did the witness say that despite what the department is doing there are still many farmers not farming as efficiently as they could?

Mr. TAYLOR: We have some border-liners—we have them in every industry.

Senator CRERAR: Earlier, you stated that you had a number of schools. How many?

Mr. TAYLOR: We have four schools.

Senator CRERAR: Are these people county agents?

Mr. TAYLOR: We have a county agent system, yes.

Senator CRERAR: And do they go out in the field and visit and advise farmers, and consult with them on their operation?

Mr. TAYLOR: That is right.

Senator CRERAR: Do you get practical results from that?

Mr. TAYLOR: We have.

Senator CRERAR: Would you say it was successful?

Mr. TAYLOR: I would say that it is as successful as you could anticipate. There is always room for doing a little better, though.

Senator CRERAR: What I am getting at is this: there appears to be a great deal of scientific and practical knowledge evolved or brought out in the departmental administration, and what I was anxious to know is if that information gets out to the farmers and do the farmers take advantage of it?

Mr. TAYLOR: It has got down to the farmers a lot, and many of them have taken advantage of it. If you take as an example our potato growers, they are very efficient operators and produce big crops, much bigger crops than they did 25 or 30 years ago.

Senator CRERAR: Are they successful from the financial point of view?

Mr. TAYLOR: They have their troubles.

Senator CRERAR: What class of farmers would you say are not successful?

Mr. TAYLOR: It depends on what is meant by successful—financially or productively successful. I do not think I can answer your question, Senator. We have some very good potato farmers who in some years are not successful, financially, and that will apply to some other classes periodically as prices fluctuate.

Senator TAYLOR (*Norfolk*): I would like to ask the witness if he has any information with regard to the amount of fertilizers used in the province?

Mr. TAYLOR: We use from 60,000 to 65,000 tons a year.

Senator TAYLOR (*Norfolk*): Are fertilizer plants located throughout the province?

Mr. TAYLOR: Only mixing plants.

Senator MOLSON: Mr. Chairman, might I ask the witness to what extent is land use limited by availability of markets.

Mr. TAYLOR: We have a relatively small population in New Brunswick.

Senator MOLSON: You mentioned a moment ago potato growing. What is the market for them?

Mr. TAYLOR: We have to export potatoes.

Senator MOLSON: To where?

Mr. TAYLOR: We export them to central Canada, to the United States, Cuba, the West Indies, South America, Africa, and to Europe sometimes.

Senator HORNER: And sometimes potatoes have to be imported into Canada.

Mr. TAYLOR: Yes, in parts of Canada other than New Brunswick.

Senator MOLSON: What I am getting at is, in dealing with this problem of land use is there some limitation on it by virtue of the availability of markets? We have dealt with poor soil, with good soil, drainage, irrigation and reclamation, but, in fact, is not part of the problem of use of land in the province of New Brunswick governed by the availability of markets?

Mr. TAYLOR: I would say so, yes. We are on the rim of Canada, and anything we move is moved at a high transportation cost.

Senator MCDONALD: That is one of our big problems.

Mr. TAYLOR: Transportation is certainly one of our problems. The second thing is, we have a small population—we have little industrialization. I think it would be advantageous if we had greater industrialization in the province for the development and the utilization of the products of our farms in our local markets, which would get us away from this long-distance haul to get into the export market.

Senator MOLSON: In other words, to some extent markets do govern the use to which any given area is put?

Mr. TAYLOR: That is right, senator. And much of this land here which is classified as fair land and so on, with larger population could be developed with lime and fertilizer to be productive land.

Senator HOWDEN: At what cost? Would the cost not be too great?

Mr. TAYLOR: No, I do not think so.

Senator HOWDEN: That is the great point: you can do anything if you have money enough to do it.

Mr. TAYLOR: If you have money enough, yes. We have in this area here land which is being very well farmed and is very productive, and it has been profitable production. It may not be profitable under present conditions but it has been.

Senator HORNER: You say that your province could maintain a much larger population than it has at the present time.

Mr. TAYLOR: I think if we had more industrialization we could support a larger population, both agriculturally and industrially.

The CHAIRMAN: Thank you very much, Mr. Taylor.

Dr. F. W. Walsh, M.B.E., B.S.A., L.L.D., Deputy Minister of Agriculture for the province of Nova Scotia, called:

The CHAIRMAN: Mr. Walsh, would you tell us something of your experience in the line in which you are interested.

Mr. WALSH: Well, Mr. Chairman and honourable senators, first of all I want to say that this is a great opportunity. The people of our province feel that it is, because when the announcement was made that this study would be handled as it is being handled it gave us a lot of enthusiasm and heart. We believe that this committee can do a grand job. If all the members of the committee have the same knowledge of farming across Canada as have the representatives on it from the Maritimes, we know that it is in excellent hands.

Now, I am like Dr. Taylor, I have not prepared anything particularly. I would prefer to deal with questions, but I would like to make a few statements, if I may, on matters which have been dealt with in questions during the last hour or two. I want to try to show the economic picture with which Nova Scotia, or the Maritimes generally, are faced as far as agriculture is concerned is not confined to eastern Canada. It extends at least over the North American continent. I have figures here, taken from the 1951 census, which show in dollars the amount of produce that was sold off Canadian farms. These figures include the products of the forest, which in Nova Scotia amount to about 17 or 18 per cent of the total production. The figures of income—not net income—from what is sold off the land, show that 62.4 per cent of Canadian farmers receive less than $2,500 each. I repeat that is not net income, that is what is sold off the farms. The net must be considerably less. As we cross Canada we find that Ontario is in the best position, according to the statistics. The percentage of farmers receiving less than $2,500 is around 51. Of course, the lower the percentage the better the average income. In the Maritimes around 75 per cent of farmers receive less than $2,500. On the prairies the proportion is about 55 per cent. I will not trouble you with the exact figures; I have them here, and they are all in the records.

Senator CRERAR: That is not the average.

Mr. WALSH: That is not the average. The figures I have cited are taken from the census of 1951. Approximate percentages are: Manitoba, 53; Saskatchewan, 55; Alberta, 56; British Columbia, 72; Nova Scotia and New Brunswick, 88; Prince Edward Island, 76; Quebec, 84.

The CHAIRMAN: That relates to gross income?

Mr. WALSH: Gross. Now this is quite a serious thing. The situation in the United States is serious, too. We have not the figures, but according to some records I looked up the United States is spending $5,329 million to try to do something for the farmer, and this is exclusive of the cost of operating the Department of Agriculture. Based on a population of 160 million, that represents a spending this year of about $33 per capita.

Senator CRERAR: That is really a subsidy.

Mr. WALSH: Subsidy, soil bank, many things.

Senator CRERAR: Well, they are all subsidies.

Mr. WALSH: That is right. I tried to get similar figures for Canada. I want to show you the magnitude of the job. According to the figures I have, expenditures on P.F.R.A., P.F.A.A., M.M.R.A., price support, freight assistance on feed, the hog bonus for quality, cheese bonus, and the cold storage erection subsidies, totalled $39 million. If I have underestimated the amount by a dozen million or so, this means that for all these purposes we shall spend, in Canada, this year, around $3 per capita. I offer those figures as a background and a start for what I want to say later.

Senator McDONALD: That is, apart from the Department of Agriculture.

Mr. WALSH: That is apart from the administration of the federal and provincial agriculture departments. I have no figures on provincial expenditures. So it will be seen that this problem is not confined to any one part of Canada.

One honourable senator asked a question about markets. Here, I think, is the key of the matter. The question was asked of the spokesman from New Brunswick. I want to show you something from that map. Up in the left-hand top corner, right under that nose which sticks out, we have in Maine the county of Aroostook, which is no bigger than the New Brunswick counties of Carleton and Victoria. Last year it produced—I have not the exact figures—around 70 million bushels of potatoes.

Senator TURGEON: Is that the Maine counties or New Brunswick counties?

Mr. WALSH: That is in Maine, in a county bordering on New Brunswick. That production is about equal to the total production of Canada. What I am trying to point out is that if we had the markets they have in Maine, if for example we had Cuba, and, as we had for years, the United States, we could produce just as much, and of equal, if not better quality. That statement is generally applicable not only to Nova Scotia but to New Brunswick and Prince Edward Island. Export markets have diminished, populations have grown somewhat, but not as much in the extremities of Canada as in the central part of the country.

It is not my place to point out considerations affecting trading, tariffs and things of that kind, but I would like to mention this. According to the best statistics I could secure, last year there were made in Canada around half a million cars. The tariff protection these cars received figures out at $500 per car, and on the basis of $3,000 per car or truck, amounted to $250 million. I am not advocating protection, but I am saying that the farmers' export markets have decreased and the farmer is caught in the squeeze. Personally I think he is just as efficient, if not more so, than any other class of our citizens, and that some of these conditions of vacant or semi-vacant farms and the exodus from the farms to the cities are brought about by the competition of industries which these people think offer better conditions for a livelihood. I might say that one of the financial papers in Toronto carried a statement on this last week. It indicated that one of the big automotive manufacturing companies has spent $367 million on labour and materials, and of that only $17 million went to any province outside of Ontario. That may explain in part the reason for the 51 per cent in Ontario and the 74 per cent in Nova Scotia.

Inflation, the cost of production and the drying up of exports has hurt our fruit and potato industries in the east, and some other commodities in other parts of the country.

Now I will get down to land use. In my personal opinion the land that went out of operation in the east did not do so because of poor quality. It went out of operation because of economic conditions, and the size of farms and the lack of adjusting farms to the growing needs and costs.

Let me be a little more specific. I gave a short talk in January to our own farm group. I spoke about a farmer in Cape Breton, in the eastern part of Nova Scotia, whom I knew well and who was farming some thirty years ago when I started to work in that province. His gross income at that time, as nearly as I could figure it, was around $1,100. This was from his farm. His total machinery in those days would not cost more than $500. Over the years this farmer changed his methods. He undoubtedly had some financial assistance, and so on, but today that farm with a little addition and some extra acreage cleared is giving him a gross of about $6,000 or $7,000. He is

one of those farmers who has been able to adapt his farm to the changing times, but for everyone who has been able to do that there have been ten who have not. Therefore, I think finances is one of the important items.

If I might make some personal references, I would like to refer to the farm I was raised on, which was not far from that upon which Senator Taylor of Westmorland was brought up on. In the last fifteen years the old farm has expanded and taken over the two adjoining farm properties. Incidentally, when I talk about acreages I am going to talk about acreage of improved land and not about the acreage that is within the borders, for I believe that is the only true picture. I can give a clearer picture that way.

In any event, that acreage has increased from 155 to 240. This was done by purchasing the two adjoining small farms through some government loan plan. I want to make that clear. The acreage was increased, too, by clearing some of the land between the line fences. When I was a boy that farm yielded a gross revenue of about $3,000, which was a big gross revenue in those days. The product being sold was hay. We were among the plutocrats of Maritime agriculture, and that applies to the poorest part of the Maritimes, which is in the marshland areas. They are not using horses in the Maritimes now, not in the cities anyway, and that market has gone.

The bigger farms, and we have some big ones, are producing livestock. I might say here that for the last three years we have been concentrating in our department on the farm management angle. We believe the overall picture from the dollars and cents angle is one that is fundamental, and so the boys on our staff and from our seventeen agricultural representatives have been concentrating on farm management. We can see where we are going, but our farmers cannot do it alone. The farmer who has the 250 acres of land in the area around our marshlands needs capital of about $15,000 to $20,000 more to get into the beef business. We can preach and talk about it, but we cannot do anything until we can get him the money.

Senator CRERAR: How would that $15,000 to $20,000 be spent?

Mr. WALSH: We think some of it could be spent in remodelling old buildings. We believe we can handle the cattle or sheep in open buildings, at least with one side of the buildings open, but it would cost something for remodelling. It would cost to buy the initial breed stock, and we are not talking in terms of pure breds but of beefy animals. It would take two or three years before that income would be returned.

I do not know whether I should bring this point in at this time, but the woodlot is an important part of our farm operation. I know there are many senators in this room who have forgotten more than I will ever know, but I was looking up the night before last some material on this matter and I read a report by Dr. J. K. Galbraith of Harvard University. An economist, he is a Canadian, and has written some material that I think I can say I am in agreement with, although I am not an economist myself. They have made a study in Digby County, which is one of our counties which is not considered to be among our better agricultural counties. He said. "It is the problem of how to adopt patterns of production or readopt patterns of production once they have been organized around a too extensive land use.

When the needs of money were much less, the farmers lived off the woodlot with some cattle, some sheep, some other livestock and some cash crops. But a farm cannot be operated on a revenue of $1,000 or $2,000. When I was telling you about the Cape Breton farmer who has changed his methods, I could have pointed out that the upkeep on his farm truck—which is his touring car, by the way, as it is with most farmers,—is much greater than the cost of maintaining all the machinery he had thirty years ago. His needs are greater now, and that is what I am trying to get over. The other night I was working

on this at home. I did not have an opportunity of getting at it sooner because our House is in session and the estimates are before it. In any event, I had six or seven calls that evening from members of our staff. Incidentally, I want to say here that we have a grand staff of young men who are taking over from the old fellows who are moving along. But each of them had an idea, and they were pretty nearly the same, and they would follow and say, "You want to touch this, and touch that." I want to indicate this to show you the interest that there is in this committee's work; and they think, and we think, of livestock as our solution.

So that you will get the picture: In the Atlantic provinces—Newfoundland, New Brunswick, Prince Edward Island and Nova Scotia, to feed ourselves we would require to turn off from our farms 130,000 more head of cattle a year, 45,000 more head of calves, and 400,000 more hogs. As far as lambs are concerned we are producing slightly more than we are consuming; in fact our consumption is quite low all across Canada. We believe that this is the plan that we should follow.

The CHAIRMAN: I may have misunderstood, did you say that you would require to produce—

Mr. WALSH: I said we are deficient in our production.

Senator HAWKINS: To the extent of that amount you mentioned?

Mr. WALSH: To the extent of that amount, in the four Atlantic provinces; we are deficient in the four Atlantic provinces, in meats, which would only be and could only be supplied by the additional number of animals I have given.

The CHAIRMAN: You do not import to that extent, do you?

Mr. WALSH: Yes, we do; that is it. I will give you the figures again: We import 130,000 cattle, 45,000 veal, and 400,000 hogs.

The CHAIRMAN: Is that for all the Maritime provinces?

Mr. WALSH: That is for the four eastern provinces. Would you like to have the figure for Nova Scotia?

The CHAIRMAN: Yes, I would like it broken down, because I have a notion that Newfoundland has to import most of that, but I may be wrong.

Mr. WALSH: Nova Scotia, 45,000 beef a year.

The CHAIRMAN: Deficiency?

Mr. WALSH: Deficiency; veal, 18,000; and hogs, 196,000.

Senator CRERAR: What about lambs?

Mr. WALSH: We have a slight surplus in Nova Scotia and Prince Edward Island. There is a very low per capita consumption of lamb across Canada. Some of us think the consumption is too low. I will give you the figures for the other provinces, if you wish.

The CHAIRMAN: Yes, please.

Mr. WALSH: New Brunswick: beef, 38,000; veal, 4,000; hogs, 116,000. Prince Edward Island has a surplus of beef 15,000; it is short in veal—2,500; it has a surplus of hogs, 45,000, over its consumption. Newfoundland: beef, 48,000—they produce very little over there; veal, 21,000; pork, 134,000. I have given you those in round figures.

I do not know if I made this clear in the beginning, that it is hard for us to analyze what is meant by land use, but I am trying to interpret it in my way, and I hope it is the way you are interpreting it. It is not the initial value of the soil as we find it. Of course, we have lots of good soil and lots of poor soil, and that obtains in every part of Canada, and on practically every farm; but it is the use that is made of it that is important. When I was in Denmark some years ago I spent 10 days visiting some 30 farms in that country, with

interpreters, and I saw marvellous crops, no better than the best crops in Canada, but uniformly high. I was up in Jutland, around the districts of Randers and Aarhus; the land was marvellous and rich; it looked splendid, and it was producing grand crops, and after all that is what counts. One afternoon we motored across the peninsula to the west coast, where I saw them breaking land which looked like barren blueberry land to me; it was white, and sandy as the plow turned over. In my ignorance I said to the Danes, "Why do farmers waste their time on that kind of land?" I was immediately told that the land which I admired that morning and during the previous three or four days, and which I had thought so good, was similar twenty years ago to the land that stretched before us, but that good management, with good markets, was the reason for the change, together with a good plan to improve it. That is why I do not fear the possibility of improvement of any land which is not rock or gravel, or is not flooded with water—and even then the water can be drained in most cases. That is how we approach the problem now. Perhaps I should say that we have no less than 700,000 acres of land in our province that is improved and being operated. At one time, 30 years ago, we had over twice that amount. All the land that we have lost has not necessarily been poor land; we have lost some good land as well. Our soils men gave me figures to indicate that we have in the province over 2½ million acres, or at least three times more, of land, which is as good as any of the land there; and there is also some second class land that can be made good.

Perhaps I could explain myself in Canadian terms to show what can be done with land. My son has a farm in the Annapolis Valley, where Senator McDonald comes from. I was thinking of buying a farm there at one time, and I looked up the soil maps and found that half of the front of that farm was what was known as Canning sand, which was very poorly rated. I did not buy the farm, and it was bought by another man about five years ago. By liming and fertilizer and the use of alfalfa and brome grass those fields are just as productive as any we have in Nova Scotia or any other place today. That is why I want to get the idea of management across to this committee. At least, those are my opinions.

Now, we think because of that factor there is a market for our livestock, if we can get it; and we can get it, if we go after it properly.

Let me give a few more facts to show that we have good livestock producing land. In Canada there are from one to three Experimental Farms operated by the federal Government in each of the provinces. In Nova Scotia we have two: The one at Nappan deals generally with general crops and livestock, and the one at Kentville has to do with fruit.

The farm at Nappan, and indeed nearly all of other farms across Canada, carry on experiments as to the carrying capacity of land. That means, how many pounds of beef can be produced on this land in the five or six months in the summer? A record is kept of all farms in Ontario, Alberta, British Columbia and the other provinces.

You may be interested to know that in the past three years experiments at the farm at Nappan indicate that the carrying capacity for fertilized pasture is the highest in Canada, with the exception of one farm in British Columbia which is an irrigated project. I will give you the figures, because I think they are significant. The uncared for and unfertilized pasture produced 233 pounds of beef per acre per year, averaged over a period of three years, while the improved fertilized pasture on marshland produced 548 pounds.

Now, that is the way we think we should go, but we need some finances; we also need some encouragement to keep young men on the farm. We want to at least make them think it is worth while for them to remain on the farm; we want to establish an equality for our farmers. Many instances can be cited

of young well trained men on our farms who are continually being offered jobs at good pay, but who wish to remain on the farm if they get proper encouragement and assistance in their efforts to carry on a successful operation. Considerable money will have to be spent and plans will have to be made, but we think this can be accomplished. Let me tell you how I think it can be done.

First, I should like to say to you that we in Nova Scotia have a Farm Settlement Board and we think it is a very good one. Let me point out that this board was established during the depression years, and we have not gone through another depression such as that suffered in the thirties. We have loaned more than $2½ million for land settlement, and our repayments are up to date. Our policy is to help, for instance, a young farmer who is able to put up one-third of the cost of his land and buildings, and one-half of the value of machinery and equipment. Let me say that the figure for machinery is continually becoming a bigger item of cost because of a shortage of labour. The Settlement Board keeps the farm in their name and the farmer has from 20 to 30 years to pay for it. Senator McDonald had a great deal to do with this policy when he was Minister of Agriculture in Nova Scotia. Our maximum assistance at that time was $3,000; now it is $10,000. While it would be unwise for me, as a civil servant, to voice government policy, I can say that the better farmers in our province think the amount should be at least doubled to meet changing conditions. On the other hand, we loaned last year $500,000, and we got back about $300,000 from earlier loans. As has been pointed out, this is a revolving fund. But we are settling faster in these past few years than we were in earlier years. Ontario has a policy somewhat like that of Nova Scotia, and other provinces are starting such a policy.

About 30 years ago the Canadian Governmnt established a Canadian Farm Loan Board to loan money under mortgage; that follows a little different plan, but it serves the same end. However, since its inception, they have loaned in Nova Scotia only $958,000 and loaned around $100,000 last year. We are not finding fault with that organization, but they ask for pretty good collateral and they are cautious. We do not think thy have applied the same values as we have in our loans for settlement purposes. We have lost no money in our loans. But we are more interested in a man's program, in his integrity, and in some other things besides collateral.

When the Gordon Economic Commission was in Nova Scotia for its hearings there about a year or so ago, the Government of Nova Scotia made a submission, and I am pleased to note, if I read correctly, that the Commission in its preliminary report refers to this type of plan in a veiled way, but I hope it is referring to what we recommended.

We said in that submission that 25 years ago a person in the province of Nova Scotia, with $5,000, could probably purchase and equip a farm. Today an economic family unit farm will require at least $20,000 to purchase and equip. I am not quoting the exact words, but that is the gist of what was said. Then the submission goes on to say that we have the Canadian Farm Loan Board operating in the province as well as the Nova Scotia Land Settlement Board operating in the same field, and there is some little competition between the two. In our submission we suggested that these two join together, the province to administer the plan, with the federal Government putting up 75 per cent of the money on a basis somewhat similar to that which exists in our province between the Canadian Government and our Housing Commission. By allowing us to administer it would cut down competition, and we will liberalize the application of this, raise the maximums, and do a job, and not throw the money away.

Senator McDonald: What equity would the farmer have to have in that?

Mr. WALSH: Well, Senator MacDonald, those are details that I do not know, but we did not have any thought at the time of changing it much from what we have been operating under, although it might be necessary in special cases where the man is well trained and well educated.

Now there is one other thing that has been said about education, and before I go into this plan here, which is pretty sketchy too, I would like to say what I think, and what I say is pretty nearly the thinking of the team of workers of which I happen to be one—we do very little without full consultation—and I think this would also be the views of the Government.

Education is absolutely fundamental for successful farming, education secured on the home farm, education secured by special training which is provided so well in many parts of Canada. In Nova Scotia we have an agricultural college, we give a two-year course, part of which leads to a degree,—to finish at some other college in Canada,—but we are primarily concerned over the boys who take the two-year course known as the *Farm* Course and who go back to the farm. Now, we have not secured as many students as we would wish, and so we are building, and will have completed this year, a new dormitory and we hope this new facility will encourage mothers to let their boys leave home for the first time. We would like to see almost our entire emphasis placed on the farm course. You will probably say that I am just talking and boosting the college because I know something about it. Again, I have to go back to the famous county of King's where Senator McDonald comes from and say that within a radius of 5 miles of the town of Kentville, at our last count, there are 68 farmers, farm owners, who are operating farms and who are graduates of the two-year course at the Nova Scotia Agriculture College, and those men are among the best in that county as farmers and community workers. We think that the future depends on us setting up a plan that will attract this kind of people back to the farm, because without them we are lost.

Senator TURGEON: What is the cost to the student taking these farm courses?

MR. WALSH: That is a very good question, Senator Turgeon. I cannot tell you exactly the dollar cost. The board is about $15 a week. No tuition fee is charged. The dominion Government and the provincial Government join under a youth training plan to subsidize students 50 cents a day for their board—that is $3.50 a week. That figure was set quite a while ago and it might be subject to reconsideration.

Senator TAYLOR (*Westmorland*): And transportation is paid too is it not?

Mr. WALSH: No Senator. The province of New Brunswick are very good businessmen, they don't have one of these colleges, so they pay the transportation of the New Brunswick students and we educate them. I may say that both Senator Taylor and I received that assistance. You would think I was a Nova Scotian, but I was born in New Brunswick too.

We want the continuation of the policy of freight assistance on feed, which was established in October 1941. It has been a grand thing for all of Canada.

Some Hon. SENATORS: Hear, hear.

The CHAIRMAN: There is a gentleman right behind you who does not agree with you, Mr. Walsh. Just talk to Senator Crerar on that.

Mr. WALSH: I will take him to my room and we will have a long talk over this. But that is what makes me nervous; I have been very nervous because I know that there are senators in this room who have had a long background in these problems. However, I was one who had something to do, along with Senator McDonald and Senator Taylor, with this freight assistance matter. The argument which was used at that time was that, Canada being a

country with great wastelands between the farmlands of the east,—the populated lands of the east,—and the great fields of the west, some special assistance was needed to get the producers together. I attended a conference in Montreal in April, 1939 at which farmers in all parts of Canada were represented. At that time the westerners were in dire need of markets for their grain, and it was the westerners—and I could name the men too if necessary—who advocated this policy. I think they were very wise men.

Senator CRERAR: They were grain growers, not livestock producers.

Mr. WALSH: We will go a little further. Over the years since its inception, there has been, as you know, little rumblings in certain sections. The provincial ministers of agriculture in Canada meet once a year at what is known as a provincial ministers' conference. They take along their deputies too. We visit each province and we spend two or three days on very serious matters. This question has come up at our meetings, and all I can say to you, gentlemen, is that while it was not always the case, in the last three or four years every minister from every province in Canada agreed that it was a grand thing. That stand was taken after Alberta had made a very careful study, lasting over six months, to find out the impact of it. That is why I am saying these things.

The limestone policy which you have heard—and practically all the lands of Nova Scotia need limestone—is a joint one. It was started by the provincial governments, and about ten years ago the federal Government joined with them and they pay half of the costs. We deliver limestone at the farmer's station for $2 per ton. Unfortunately we are not able to get enough used. It comes from a background of lowspiritedness among our farmers and poor economic conditions, but the policy should be promoted vigorously. The Maritime Marshlands Rehabilitation Act, as passed by the federal Government ten years ago, to rehabilitate the marshlands of Nova Scotia and New Brunswick bordering along the Bay of Fundy, deals with land which maybe does not look too good, but there is a lot of good land there, and in the last ten years about seventy out of eighty or ninety thousand acres have been rehabilitated and are being used, in an area where the farmers have sufficient finances to get into livestock quickly. That, from our point of view, is a great policy. What the M. M. R. A. does for the marshland owners is something like what the P.F.R.A. is doing for some farmers in the west. We would like to have the ideal reflected in that plan carried on in connection with all our farmlands, whether they are marshlands or uplands. We need some coordination and guiding authority. You can call the authority anything you like. One name might be the Maritime Agricultural Rehabilitation Authority. Give it authority to operate jointly between the federal Government, the provinces and the landowners to deal with many projects as follows—for land breaking—we have a policy now. You may ask if you are losing so much land, why do you have a land breaking policy? I say again, it is based on the economics and the farm management plan. Land going back to forest or lying idle ten miles from the farm is not of much value. Our province bonuses land-breaking up to about one-third the cost of the heavy equipment which is used to do the job. That policy should be developed and enlarged. We do surface drainage now; it should be enlarged. Also underdrainage, bog drainage, farm ponds, fresh-water control, and woodlot management and last but not least Community Pastures. I have named only a few, but this is the type of thing the authority might take on. The control of fresh water in the streams. I might tell you that we have about 200,000 acres of what we call alluvial soils. That is the only place in Canada where they use the term "Intervale". It is low land along fresh-water streams above the marshes. It is grand land, but there needs to be some assistance given to utilize it fully.

I have talked a lot, but I think probably I have covered more or less what I have here. There is so much to deal with. There may be some questions.

The CHAIRMAN: You have given us an awful lot to think about. I will say that. We shall have to adjourn in about ten minutes at the latest. Who has some questions to ask? No controversy, Senator Crerar, please!

Senator CRERAR: I think Mr. Chairman, perhaps I had better keep quiet. But I do want to say this to the witness, that there is by no means unanimity in western Canada on a freight rate assistance policy. It is quite true that the grain farmers have supported it, but I can assure you that the livestock producers are pretty nearly a unit against it, and for the reason that the rate for livestock is based on Toronto and Montreal. And if they were going to be put in the equivalent position they should have the freight rates from Fort William east on their livestock products. That, however, is not to make an argument.

I have been delighted with the information disclosed by Mr. Walsh. It indicates that his people are doing a lot of constructive work on this problem. I would like to ask him one question. What value do you attach to the county agents?

Mr. WALSH: We have agricultural representatives as they have in other provinces. We have had them now for about twenty-five years and they do very important work. In the past few years they have spent a considerable amount of time on organization. They work with farm organizations very closely, and they make many farm calls. However, we are trying to establish under our farm management plan a little different approach for the county agent and for the specialist. This may be of some significance. Believe it or not, I was a specialist in livestock. I used to go out to the farmers and try to promote hogs, and if my selling ability was good enough I got them to raise hogs whether it should have been part of their program or not. We have done that with poultry and other things, but now we are coordinating all this under farm management dealing with the family farm, —looking at it from the revenue point of view,—the income and the expenses. We are trying to establish an overall plan. Everyone of our county agents is being trained under our specialists to do that.

Senator CRERAR: I take it you have the same problem in Nova Scotia as elsewhere in Canada, that there is an exodus of young men from the farms. Would you say that in Nova Scotia this is due to the fact that the working day on the farms is longer and that their remuneration is sometimes doubtful, and that jobs in cities and towns are a big attraction to young men?

Mr. WALSH: Yes, together with this fact. I may be getting into trouble, but this is right, that unemployment insurance will allow a Nova Scotia boy to come up here and work all summer and then go home and live on some assistance. That has a very great bearing when we are trying to get young men on the farms.

Senator CRERAR: In other words, he draws unemployment insurance?

Mr. WALSH: That is right.

The CHAIRMAN: Thank you very much, Mr. Walsh.

The committee thereupon adjourned until Thursday, March 7, at 10 a.m.

1957

THE SENATE OF CANADA

PROCEEDINGS

OF THE

SPECIAL COMMITTEE ON

LAND USE IN CANADA

No. 4

THURSDAY, MARCH 7, 1957

The Honourable C. G. Power, Chairman

WITNESSES

Professor H. J. Spence-Sales, McGill University.

Mr. George Spence, Commissioner, International Joint Commission.

Mr. G. L. MacKenzie, Chief Engineer, P.F.R.A.

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

86966—1

SPECIAL COMMITTEE ON LAND USE IN CANADA

The Honourable C. G. Power, Chairman

The Honourable Senators

Barbour
Basha
Boucher
Bois
Bradette
Cameron
Crerar
Golding
Hawkins
Horner
Inman
Leger
Leonard
McDonald
McGrand
Molson
Petten
Smith (*Kamloops*)
Stambaugh
Taylor (*Norfolk*)
Taylor (*Westmorland*)
Tremblay
Turgeon
Vaillancourt
Wall

26 Members—Quorum: 7

ORDER OF REFERENCE

Extract from the Minutes of the Proceedings of the Senate

WEDNESDAY, January 30, 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, Golding, Hawkins, Horner, Inman, Leger, Leonard, McDonald, McGrand, Molson, Petten, Power, Smith (*Kamloops*), Stambaugh, Taylor (*Norfolk*), Taylor (*Westmorland*), Tremblay, Turgeon, Vaillancourt and Wall;

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.

86966—1½

MINUTES OF PROCEEDINGS

THURSDAY, March 7, 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, Boucher, Bradette, Cameron, Crerar, Golding, Hawkins, Horner, Inman, Leger, Leonard, Smith (*Kamloops*), Taylor (*Norfolk*), Tremblay, Turgeon, Vaillancourt and Wall.—18.

In attendance: The official Reporters of the Senate.

On motion of the Honourable Senator Turgeon, the Honourable Senator McDonald was elected Deputy Chairman.

The following were heard:

Professor H. J. Spence-Sales, McGill University, Montreal, P.Q.

Mr. George Spence, Commissioner, International Joint Commission, Ottawa, Ont.

At 1.00 p.m. the Committee adjourned.

At 2.15 the Committee resumed.

Present: The Senators Power, *Chairman,* Barbour, Boucher, Bradette, Cameron, Crerar, Golding, Hawkins, Horner, Leger, Smith (*Kamloops*), Taylor (*Norfolk*), Turgeon and Wall.—15.

Mr. G. L. MacKenzie, Chief Engineer, P.F.R.A., Regina, Sask., was heard.

At 3.00 p.m. the Committee adjourned until Thursday next, March 14, at 10.00 a.m.

Attest.

JOHN A. HINDS,
Assistant Chief Clerk of Committees.

THE SENATE OF CANADA

SPECIAL COMMITTEE ON LAND USE IN CANADA

EVIDENCE

OTTAWA, THURSDAY, March 7, 1957.

The Special Committee on Land Use in Canada met this day at 10. a.m.

Senator Power in the Chair.

The CHAIRMAN: Honourable senators, I see a quorum. There are one or two matters I would like to bring to the attention of the committee. It is altogether likely that your chairman will be absent next week and the week after. I would suggest that we ask Senator J. A. McDonald, former Minister of Agriculture for the province of Nova Scotia, to be deputy chairman.

Some SENATORS: Carried.

The CHAIRMAN: In my enthusiasm I have provided a heavy agenda for this morning, and it may be that we cannot get through before lunch time. We have two witnesses here from western Canada, Mr. Spence of the International Joint Committee and Mr. MacKenzie, Chief Engineer of the P.F.R.A.; we will not be able to hear these gentlemen this session unless we have them today. I would therefore suggest that if we do not get through this morning, that we meet again this afternoon at 2 p.m.

Some SENATORS: Carried.

The CHAIRMAN: Our first witness is Professor Spence-Sales of McGill University. Would you tell us something of your experience and qualifications, Dr. Sales?

Professor H. J. Spence-Sales (Chairman of the Committee on Physical Planning, of the Faculty of Graduate Studies and Research, McGill University:

Mr. Chairman, I was trained as a town planner in England during the thirties. Before the war I carried on a practice as an architect and town planner in London. During the war I was at one time the Deputy Director of the Government Building Program, and when the Ministry of Town and Country Planning was formed in England in 1943, I was seconded to that Ministry to assist in technical operations and theoretical considerations that the Ministry was concerned with in respect of the new Towns Act and pending legislation which ultimately became The Town Planning Act 1947.

In 1946 I was invited to McGill University and I am at the present time chairman of the Committee on Physical Planning of the Faculty of Graduate Studies and Research. The committee consists of those departments interested in such aspects as those we have to talk about today: the departments of geology, architecture, economics, political science, sociology, law and social work. During the past ten years in Canada I have had the responsibility of teaching, and I have also conducted a certain amount of research and written upon planning matters. I have also been engaged in private practice. I am

at the present time concerned with the new town of Oromocto for the Department of National Defence, also Seven Islands and another town in Quebec called Preville. My interests are really in the broad aspect of planning.

The CHAIRMAN: Thank you. Would you now proceed with your presentation?

Prof. SPENCE-SALES: Mr. Chairman, there are some circumstances that I think it might be necessary to draw attention to at the outset. It is now apparent that our resources in first-class agriculture land are limited and in some respects threatened. We know about such circumstances in various parts of the country, and inroads upon agricultural land which once attracted very little attention, now cause a great deal of alarm. So there is this first point that I would like to make, that our resources of agricultural land are limited and in some respects are threatened.

The second point I would like to make is that urban growth in the next 25 years raises the prospect of vast absorptions of valuable land. Now, land that is employed for urban development is also land that is most suitable for farming. Land unsuitable for farming, because of its physical characteristics, is equally unsuitable for building purposes.

Thirdly, though industry itself uses very little land developments upon which it primarily depends absorb a great deal of land. Extraction of minerals, harnessing of electrical energy and its distribution, and many other facets of industrial needs are absorbers of great quantities of land.

The next point I would like to make is that the government itself is a user of a tremendous amount of land. It employs a great deal of land for steadily increasing national defence purposes and for other needs. One has only to consider that Camp Gagetown, which is presently being organized, envelopes 400 square miles of New Brunswick. Local authorities are concerned more and more with the adequacy of their water supplies and their sewer systems. They need a great deal of land and they need land of a rather special sort in order to conserve water supplies and to dispose of sewage properly.

The last point I want to make with regard to my introductory comment is that the preservation of the country-side and the securing of rights of public access to open country have also entailed the use of a great deal of land for the preservation of the country-side and for various kinds of reserves.

I mention these points, Mr. Chairman, because it seems to me that they are evidences of many demands upon land: there is the agricultural demand, and resources are more limited; there are the urban demands, there are the industrial demands. There are the demands that government creates, the demand that local authority creates and demands that are made for the preservation of the country-side and for reserves.

Now, it is generally assumed in Canada that there are unlimited amounts of suitable land for all purposes. I believe we have now passed that stage.

Far reaching changes are occurring in urban settlement. Our cities and towns are expanding. A great number of new relationships in the use of land are beginning to emerge.

Now, demands are positive and complex and very often they are conflicting, and it would appear that we are reaching the time at which some measure of control and protection over the use of land generally will have to be exercised if our dwindling reserves of land are to be saved, and if land is to be put to good purposes.

So, Mr, Chairman, it seems that in this critical issue of considering the use of land 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 of the Canadian people, the very important issue is to consider the balance of competing demands upon the use of land and, where possible, to endeavour to secure the reconciliation of rival demands in the best interests of the country. This is the critical problem.

Mr. Chairman, I would like to proceed to four particular issues. I would like first of all to illustrate the variety in the pattern of rural settlement across Canada and I would like to do this in order to present to the committee an impression of our country from Newfoundland to British Columbia.

After that I would like to discuss the classification of land upon which the uses of competing land pressures may be properly judged. And then I would like to speak about tendencies in urban development that are, I believe, creating circumstances that your committee should be aware of. And, lastly, I would like to touch upon matters on which perhaps the Government of Canada could assist.

I would like to refer, Mr. Chairman, to a series of diagrams on land settlement. They were prepared last year for the meeting of the Geographical Association.

Looking at this map you see that the edges of Newfoundland are coloured green and blue, and a dark blue in Quebec, brown in Ontario, and then a light brown across the prairies to the Pacific coast. The colours illustrate where the different systems of enclosure are across the country.

The next diagram illustrates the pattern of land settlement in Newfoundland. It is a curious haphazard patchwork which has come about through slow processes of selecting land along the coast line. Next is a pattern of land enclosure found in Prince Edward Island. Again the unit is a small rectangular field, not regular in its proportions and illustrating, once more a selection process. There is however a difference between the pattern of settlement in Prince Edward Island and the pattern of settlement in Newfoundland.

In Nova Scotia and New Brunswisk one sees something similar to the pattern in Prince Edward Island, yet it differs. It is a straggling form of settlement, essentially a patchwork of small fields, one related to the other.

Let us turn now to Quebec. We all know that the origin of the units of land enclosure in the province of Quebec have stemmed from historic circumstances, and that its particular characteristic is the long lot. This division of land stretches over the province of Quebec and is also to be found in other parts of the country where French-Canadian settlement took place. One sees a very distinct difference in character from the other forms of enclosure that we have so far looked at.

In the Eastern Townships one finds the type of square enclosure that exists in New Brunswick and in the Maritimes generally.

When you come to Ontario you find a totally different system, a much more geometric pattern than we have had before. The lots are regular and rectangular. It is a mathematical layout of units of land. This geometric division was necessary because of the way in which colonization had to be carried out in a certain regular fashion. It is a division of land irrespective of the physical features.

The next chart shows that in some parts of the province where French settlement took place quite early—for example, along the river at Windsor—there are long lots.

Turning to the Prairie provinces we have the land divided into quarter sections, all mathematically arranged. Once again it is an artificial imprint upon the whole texture of the land—a square mile divided into four. Here and there on the Prairies there are the long lots of French-Canada. We find them near Winnipeg and north of Edmonton. But the interest in the next

diagram is the way in which Mennonite communities, who knew how to live on the prairies, settled on their enclosures, formed little villages and worked on the land. The pattern suffers from that found elsewhere on the prairies.

The last of these diagrams is the picture of land enclosure in British Columbia, where, the same geometric system is applied as in the prairies.

In effect, therefore, there is a variety of textures over the whole country which has had an impact upon the manner in which land has been employed, and which will have an influence, I believe, on the question of land use.

To summarize, there is a particular system of land division in Newfoundland along the settled parts of the coast line; there is another system in the Maritimes; there is the long lot system in Quebec; the rectangular or rhomboidal system in Ontario; then there is the vast division of the land into regular squares in the prairies and extending to the Pacific. Here and there one finds enclosures that are characteristic of the province of Quebec.

I would like to talk a great deal more about this, Mr. Chairman, but time is limited.

There is one matter that might be mentioned at this moment. An enormous amount of subdivision of land is being undertaken despite the probability that many parts of the country may not be settled. It is suggested that perhaps it should not be continued.

To turn now to the classification of land, this is my second point. One may say that perhaps a nation's ultimate asset is its land, and that this land to all intents and purposes is fixed and unextensible. The broad physical characteristics of the land are to a very large extent permanent and unalterable. Geological structure and the disposition of mineral resources are equally unalterable. Climate to a considerable extent is permanent and also unalterable. The assets of land, its extent, its broad physical characteristics, its geological structures, its climatic factors are largely fixed. No significant changes can be made; minor improvements can be made; shortage of rainfall can be overcome by irrigation, but broadly speaking, the features of land are largely fixed and unalterable.

The use of land varies enormously, and it can be either wastefully or efficiently employed. Land is needed for six primary purposes: We need land for work, for homes, for food, for recreation, for communication, and for security. These are all primary needs, and the problem is to know how best to deal with land to know something of its optimum use and its capabilities.

The optimum use of land is not constant. The best use of land today may not be the best use later. There are changes from decade to decade, which prevailing economic circumstances dictate, and which would suggest that the optimum use of land can not be regarded as fixed.

Another aspect of use of land is that it can be employed for multiple purposes. A green belt around an urban area need not be a piece of stuffed scenery. It can be used for agriculture and yet provide amenity.

Land must be used to satisfy as many needs as possible, and as many legitimate desires as can be provided for.

This entails countenancing different considerations: the optimum use of land on the one hand, and multiple use on the other. So that in considering the capabilities of our land, and the purposes to satisfy, there must be a criterion to determine usage. The data which we have at present can hardly be used for this purpose; that is to say, for the classification of land for its optimum use.

We have surveys, of many sorts, but they are really not sufficient for land classification purposes. Then, on soil surveys of limited areas, which delineate soil types and soil series, the most important relate to the suitability of land

for agricultural purposes only. Even if soil surveys were complete, there would still be the need to determine the optimum use of the land.

I would like now to draw to your attention the most comprehensive system of land classification which I know about. It was carried out by the Land Utilization Survey of Great Britain under the direction of Dr. Dudley Stamp. I have brought with me two maps of this most interesting series which I now place before the committee.

Mr. Chairman, as we are pressed for time, I cannot deal with the enormous background of Stamp's land utilization survey nor with the many considerations that led to this generalised map of land utilization, or this map illustrating land classification. We know very well that the critical circumstance in the use of land in Great Britain is the primary conflict, so to speak, between land for agricultural use and land for urban needs. So, when one comes to consider the whole scope of land utilization in Great Britain, one perceives that it was based on particular criteria and that the aim in the end was to resolve the conflict between agriculture and urban needs.

This explains why land utilization on this map is indicated in a particular way. There are the broad uses of agricultral and non urbanized land on the one hand, indicated by various colours, and on the other the urban uses.

Turning to the map of land classification, you see the main categories of land: good quality land, medium quality land and poor quality land. This classification of land set the basis upon which the conflict between agricultural and urban land use could be resolved. The land utilization survey created by Dr. Dudley Stamp became the foundation for the great planning effort in Great Britain. Land classification was essential. The wartime agricultural output of the country could not have succeeded without it. And conflicts in the use of land in Great Britain since the war have been resolved against this background of land classification.

I present this, Mr. Chairman, as an evidence of a particular form of land classification, developed for special purposes in England. I am by no means suggesting that it is equally applicable in Canada. But what I do suggest to you is that surveys that deal with soils or with other particularities are important factual findings, and that if you are concerned with the balance of land uses it will be necessary to have a classification of land according to particular criteria applicable to our own circumstances in Canada. This would lead to a particular classification that might on the one hand be based on some aspects of agriculture, where agricultural economy is of vital concern, say in the Prairies, but may have to vary elsewhere in the country. The point I want to emphasise is that the employment of factual surveys, such as soil surveys, is only one aspect of the picture. What is really needed to achieve a balance of land uses, and to determine competing demands for land, is really a question of land classification.

The CHAIRMAN: Have you a question to ask now, Senator Crerar, or would you rather wait until the professor has completed his presentation?

Senator CRERAR: Mr. Chairman, if the witness does not mind, I would like to interject a question at this point. In determining the use of land in the United Kingdom you have to deal with a different problem to the one that we have in Canada do you not?

Prof. SPENCE-SALES: Very much.

Senator CRERAR: As a result of the survey in the United Kingdom how much land was determined should be planted in forest?

Prof. SPENCE-SALES: I do not have the figures with me.

Senator CRERAR: Just roughly.

Prof. SPENCE-SALES: I suppose, the question is the use of the most suitable areas for forestry such as in this stretch of land here. You have, of course, the highlands. Quite a great deal of forestry with this classification in mind has been undertaken on suitable soils. This has made reforestation in England possible.

Senator CRERAR: Take North Wales, for example. To me that is an area admirably adapted to the growing of trees.

Prof. SPENCE-SALES: Yes it is.

Senator CRERAR: I recall being there a few years ago and seeing little experimental forest plots that were doing remarkably well, yet probably 90 or 95 per cent was hilly land with valleys here and there and with people trying to develop a little farm, quite a large number of sheep and some cattle, but it struck me when I was travelling through that if, say 100 years ago Great Britain had developed an aggressive forest planting program for the area that Britain today would be practically self-sufficient in timber. Would you agree with that?

Prof. SPENCE-SALES: I would say this, Senator Crerar, that perhaps 100 years ago, England was devastating its land resources as rapidly as it could possibly do. Now a very great effort is made to conserve land so that England is at the present time engaged in various reforestation schemes upon land that is most suitable for it.

Senator CRERAR: Are steps being taken now to prepare for conditions 100 years from now?

Prof. SPENCE-SALES: I would have thought that this is what had happened in England since the Great War and I would put it this way. I would put it that the whole business of conservation now taking place—conservation of all sorts—is, in fact, planning, and it must be remembered this planning effort did not come about just because a socialist government once came into power in England. I think it is rather deeper than that, and I think the whole country is now geared, so to speak, to long-term planning. It is endeavouring to conserve, it is endeavouring to deal effectively with the decentralization of its large cities. It is building many new towns on a far greater scale than we are. And all these endeavours are aimed at making the very best possible use of the land. This is perhaps the most important happening in England, and, had it not been for Stamp's endeavours which started in the 30's by setting up the land utilization survey in England and later producing that marvellous classification of land, I do not think present efforts would be so effectively carried out. The country is dedicated to planning in a way that is arresting and important. In respect of the matters before you, there are many papers that should be drawn to your attention and which deal with the primary issue of the balance of the competing uses of land. Regard for the potentialities of land, is conservation at its best. I do not have much more to say about land classification. It is essential and somehow or other it should be done in Canada if we are to build properly, and if we are to use our land to the greatest advantage. Without it I believe that it will not attain satisfactory ends in land use, agriculture or otherwise.

I would suggest that perhaps later on the committee might hear the Geographical Branch of the Department of Mines and Technical Surveys, who have undertaken such work, and an authority, who can lay this all before you far more effectively, is Professor Hare of McGill University, who is a distinguished geographer and worker with Dr. Dudley Stamp.

I would like to turn now to tendencies in urban development. Perhaps it is in this sphere that I might have most to contribute. Urban development, from many points of view, is perhaps one of the crucial aspects of land use that is about to confront us. Presently in Canada, there are about 3.8 million occupied dwellings, of which three-quarters of a million are on farms, about two and a quarter millions in cities and towns, and about another three-quarters of a million in small communities on fringes of urban areas.

Senator CRERAR: That is not population?

Prof. SPENCE-SALES: No; this is in terms of dwellings, which represents, I suppose, in a very rough sense, a measure of the distribution of people. As we know, there is a tremendous shift in population from farms to cities, from rural areas to metropolitan areas, and from central urban areas out into suburbs, a dynamic change is taking place.

Now it has been estimated, sir, that between the decade 1941-51 the towns and cities of Canada that had less than 30,000 population doubled in size. That is to say, the extent of urbanized land in these cities, increased two-fold. Larger cities, with more thant 30,000 people did not increase in size quite so much. Our metropolitan areas trebled in size. This is very significant, in that it gives an indication of the enormous spread of urbanisation that occurred in the decade 1941-51, a very significant happening which, it will be readily appreciated, is likely to pale into insignificance compared with the expansion expected now to take place in the next great phase of development. Evidence submitted to the Gordon Commission by the Central Mortgage and Housing Corporation made this issue very clear.

It is expected by 1980 that seven million people will be added to our present major cities. On the basis of about 3½ houses to the acre, or maybe about 7,500 persons to the square mile, 900 square miles of land will be absorbed by our larger cities.

The point one wants to make is this, that urban growth calls upon the best land, it calls upon the land that is most suitable for agriculture. The physical characteristics of land that make it suitable for agriculture are precisely those physical characteristics which make it equally suitable for building. This has been the circumstances in urban growth that has taken place in many countries. The spread has always been into the best land. This is really a point that Dudley Stamp demonstrated in his surveys. It was beautiful land. It was well-drained. The characteristics of the soil were precisely those characteristics that one would look for in choosing good land for building. And this is the issue raised—the impact of urbanization will fall specifically upon the best land around our larger cities.

Another matter that needs to be drawn to your attention is that, with improvements in the standards of housing and urban facilities, year by year and decade by decade, the amount of land that is needed for urban purposes increases enormously. One can illustrate this by just pointing out that about ten years ago it was usual for people to be satisfied with a building lot that had a frontage of 30 feet by 90 feet. Nowadays a minimum of 60 feet by 100 feet is demanded. With the provisions for more public open space, better schools, greater community facilities, and all that is applicable, there resulted an improvement in residential standards. Nowadays the amount of land absorbed increases tremendously. This, together with the circumstance of the rapid growth of residential areas, suggests that the demands upon our available land resources will be really very great.

And it is necessary to repeat that the urbanization we are about to experience will raise in Canada a primary issue with regard to the use of land.

Senator CRERAR: What is the lure that leads people to the development of large urban centres?

Prof. SPENCE-SALES: It may be economic, it may be cultural, it may be an endeavour to try and find a different standard of life.

It is a trend occurring all over the world. I suppose we are entering the greatest phase of urbanization in human history.

Senator HORNER: You have mentioned land that is suited for agriculture. A lot of good agricultural land is being used now for building large runways for airports. I suppose the land that is best suited to agriculture is also best suited to these runways?

Prof. SPENCE-SALES: When one is looking for easy land and good land for any purpose at all, one naturally turns to the very best land one can find. The best agricultural land is fertile. It is well drained; climatically, it is well off. All these advantages to be found in good agricultural land are those that you look for when you build. The thing to stress is that urban expansion that took place between 1941-51 will probably pale in significance to the growth that is likely to occur between 1961 and 1971. I believe that is the main circumstance we are to be confronted with.

Senator HORNER: Do you foresee a time when we will really be short of good agricultural land in Canada as a result of all this urban expansion which may take place? Do you think we will be short of good land to supply even our own needs, agriculturally speaking?

Prof. SPENCE-SALES: I am afraid I do not know the circumstances well enough to be able to answer that question specifically. The results may not be so disastrous as, for example, urban development on the same scale in the English scene. We have great land resources in the Prairie provinces to grow wheat. Urban development is not likely to occur there in the same way as it is likely to occur in other places. There have been significant changes in the Niagara Peninsula where the process of urbanization has resulted in serious losses of first class land. The issue now is whether you can afford to allow promiscuous development to take place when there is a need for a balance between competing needs. I would say that this is arising around every major metropolitan centre in Canada now.

Senator HORNER: In eastern Ontario?

Prof. SPENCE-SALES: Yes, and for example, near Montreal. There are precious soils in the Montreal region which are suitable for fruit growing, because of the nature of the soil and, because of micro-climatic circumstances which delay frost. I suppose apple growing in this region may not be important in the overall Canadian scene, but these soils are being lost.

The CHAIRMAN: What region is that you refer to?

Prof. SPENCE-SALES: Mount St. Hilaire, Mount Bruno, Mount Johnson, and Mount Rougemont—the hills that protrude out of the St. Lawrence lowlands. Then in the immediate vicinity of Montreal there are other fertile soils being absorbed rapidly. I am not too certain as to what the precise impact is in the overall sense. Economic circumstance and methods of trading and transportation might bring other areas into greater production. We may be able to surmount difficulties, but land resources are dwindling and the effect may be serious.

Senator BRADETTE: The city of North Bay is practically built on solid rock, and this community is growing by leaps and bounds and has been doing so for the last several years. The same is true of Prince Rupert and the city of Sudbury. The growth of Sudbury is due to the mining industry, but the

city is built on hills and solid rock formation. I think this might indicate to the planners of the future that they could use some of our so-called waste land for settling new communities.

Senator HOWDEN: In Manitoba there is a city that was built on a muskeg.

Senator GOLDING: Winnipeg?

Senator HOWDEN: Yes.

Senator BARBOUR: I read the other day where two Ontario farms of 200 acres each were sold for $100,000 to other than agricultural interests. Would you suggest that there should be some restriction imposed on the owners of farm land so as to prevent them from selling this property to other than agricultural interests for, say, five times what it is worth for farming purposes?

Prof. SPENCE-SALES: This leads me to another point which I would like to cover in a somewhat roundabout way. It has been pointed out that the increases in the use of land for urban purposes are likely to be tremendous. One has to realize also that there is an indirect impact upon land, that land in the vicinity of an urban expansion undergoes a change. The owners of agricultural land observe potential urban development. They reach the point at which they feel it is no longer worthwhile using their land for agricultural purposes and that they may as well wait for the increment in the value of land that the urban development will bring about.

Studies of the Montreal district disclosed that during the period 1941-51 the use of land for urban purposes increased threefold, and that nine times the amount of land urbanized during the period was affected by transition from productive agricultural use to marginal use or it was withdrawn from agriculture. Processes of urban development extending in many directions draw land out of agricultural use in the expectancy of increased land values. This impact is widespread, when it is said on the one hand that a great deal of land is taken up by urban growth, it must also be said at the same time that a far greater amount of land falls into disuse.

To illustrate this one can point to the stretch of land between the St. Lawrence River and Chambly Basin. A great deal of the land is very fine and suitable for dairy farming and market gardening. Now one sees tentacles of urban development, streets going out into fields, and three or four or five units of land to one with a single building. Land has simply been allowed to pass out of agricultural use because it is expected that it will be totally absorbed by buildings tomorrow. The whole area between the St. Lawrence River and Chambly Basin is in this state of transition waiting for things to happen. It has lost its agricultural propensity, it has already begun to change. This does not illustrate the issue you raise, but it does point out the circumstance of a man unwilling to continue farming when he sees a great increment in the value of his land for urban purposes, which may or many not take place.

Senator BARBOUR: It is pretty hard to stop, is it not?

Prof. SPENCE-SALES: No doubt it is pretty hard to stop it, but we may have to determine limits to the extent of urban expansion in certain directions when our precious soils are seriously threatened.

Senator HORNER: That again is much more difficult in this country where we have ten governments, instead of one as they have in the U.K.

Senator BRADETTE: The boroughs, too.

Senator HORNER: In the U.K. the one government has full control with regard to supervision of land use, has it not?

Prof. SPENCE-SALES: I would be inclined to say that in the growth of the planning idea that has taken place in Canada in the last ten years there is an increasing consciousness of the necessity to plan not only for urban purposes but for regional purposes as well. And perhaps some of the most interesting developments in this respect in provincial planning legislation are to be found in Alberta. In regional planning there is an increasing understanding of the need to achieve balance between urban and other uses. There are indications that the restriction of the promiscuous urban development is coming about.

Senator BARBOUR: I see that the British Petroleum Company has taken in quite a lot of land near Montreal for refinery purposes, and so on.

Prof. SPENCE-SALES: To illustrate the point you are suggesting. There are, of course, dramatic things happening around Montreal; they are also occurring near other metropolitan areas as well. A tremendous amount of capital is being invested in land in preparation for urban extension. On Isle Jesus, for example, which is close to the Island of Montreal, there is lovely agricultural land, which has almost all been bought by investment interests in preparation for urban expansion. These are important interests, large in scale and having in mind of course the undertaking of urban development on a comprehensive basis. Out of this very circumstance and because of the manner in which large scale developments have nowadays to be undertaken, we might, if metropolitan government comes into being and if we have a metropolitan organization able to control land use, we will be able to achieve great things.

The trend toward wider planning powers and more careful control over the use of land for urban and other purposes is emerging in the Canadian scene now.

The CHAIRMAN: That is zoning on the municipal level?

Prof. SPENCE-SALES: Zoning on the municipal level simply takes care of strictly urban usages, but the broader planning issue is the relationship of urban areas to their wider surroundings.

Senator BRADETTE: Which is in the realm of provincial government?

Prof. SPENCE-SALES: Which is in the realm of provincial jurisdiction, yes, indeed.

I would like to return to generalities. In urban development there is a transition from city to metropolitan area and from the metropolitan area to urban region. Cities turning into metropolitan areas evidence mainly an outward tenacle-like growth. A metropolitan area evidences two contrasting tendencies. First of all, on its outskirts it tends to disperse and to form new communities on its periphery. In contrast but at the same time concentration takes place at the core. There are these two happenings at the same time—dispersal, on the outskirts; concentration at the centre. Dispersal on the outskirts accounts for the greatest absorption of land and for the most serious transition in agricultural land. It is this withdrawal of agricultural land that amounts to nine times the quantity of actual urbanized land that is critical. And again this impact always seems to fall on the best land.

Metropolitan areas are tending to form urban regions. By "urban region" is meant a territory consisting of a constellation of urban developments, such as, for example, the pattern that occurs about London, Ontario where there is a clustering of centres that have economic ties and relationships and that fulfill somewhat similar functions. In urban regions there is a significant tendency for urban development lands to remain compact. The smaller cities that form these clusters or constellations do not appear to have the same propensity to stretch outwards as do isolated cities. There is a full utilization of land in

their immediate vicinities and there is a greater sense of balance in the use of land. Perhaps out of the pattern of urban region may develop a more orderly use of land.

Another point to make on urban concentration is national security.

Mr. Chairman, this matter may be of great significance. It is now realized that there are dangers to a national security in great urban concentrations. The destructive effects of new weapons is such that dispersal needs to be thought about. Dispersal is of course now occurring in our urban areas. For security dispersal may need to be hastened.

In addition greater dependence needs to be placed on the maximum use of agricultural land for purposes of survival. Out of this may well emerge the growth of urban regions across a great deal of the settled parts of this country. We might well find because of the need to secure food supplies a far greater trend on a sensible use of land.

Mr. Chairman, I have a report which was prepared for the Defence Research Board on this subject, which deals with these issues clearly. In Canada great concentrations of people are creating dangers and it may be necessary from a national point of view to achieve greater dispersal than we already have.

If such dispersal takes place, as it well might, there will also occur a greater dependence upon agricultural productivity in the immediate vicinity of cities to ensure at least a dependable supply of basic foodstuffs: If it does occur, revival of interest in the optimum use of land for agricultural purposes will follow. I would like to leave this report with you.

The CHAIRMAN: Yes. You refer to "A Guide to Urban Dispersal".

Prof. SPENCE-SALES: It contains observations on impacts upon agricultural land and its proper use, which might be useful to your purposes.

Senator CRERAR: How would you suggest that dispersal should take place by mandatory means?

Prof. SPENCE-SALES: I suppose in the interest of national security it might be within the realm of the federal Government to instigate some aspects of this. There are recommendations at the end of the paper which set out some features of governmental responsibility at federal, provincial and municipal levels.

The CHAIRMAN: If I may interrupt, this study was initiated by the office of Civil Defence Co-ordinator, and the Committee on Physical Planning, at McGill University. This was prepared for the purpose of civil defence.

Prof. SPENCE-SALES: The underlying theory is the balance of land uses in an urban region pattern. Urban development, if it has to be dealt with to meet aspects of national security, will have to be planned in a particular way, the potentialities of land would be all important. This document deals with the survey of land, the manner in which dispersal units are located, and the way in which land should be employed to insure subsistance. So it does treat the very problem you are confronted with, that of the balanced use of land as between urban and agricultural uses.

Senator CRERAR: Would you suggest it might be useful to put a limit on the size of cities?

Prof. SPENCE-SALES: I think in this particular study the suggestion was made that there may be need to limit cities to a certain size.

So, Mr. Chairman, to conclude what I have to say with regard to urban development and its threat to our limited resources of land, I think the committee should be concerned with what is likely to happen in urban growth. This perhaps is the most important issue in the problem of land use. Vast

developments will occur within the next decade or two that will create tremendous demands on land reserves. There must be land for urban uses; you cannot restrict it totally, but wastage can be avoided. And land must also be available for many other purposes—agricultural land, industrial land, land for government purposes, for local authority purposes, and for many other positive and complex demands.

It is in this realm of demands and rival claims for land that the real problems arise, and perhaps the demand for urban land will be the greatest and most contentious.

Senator HOWDEN: Do you not imagine that much of these emergencies will be taken care of by the open-eyed, front rank men, who sense these things long before most of us think of them? In the ordinary process of development which overtakes all parts of the world from time to time, there are always men who have their feet set squarely on the ground and they smell out these opportunities, so that there is little left for planning.

Prof. SPENCE-SALES: I am not sure that I would agree on that point, because what is needed is a device by which many and conflicting demands must be co-ordinated. It might be a very reasonable thing in some localities for urban use to be the predominant interest, but there are other needs to be satisfied as well. I think in the affairs of men you need at times some co-ordinating instrument. I think things have to be directed, helped and organized.

Senator HOWDEN: Do you not think as the need arises it has to be met? For instance, we have a city in the centre of the continent, it is only about 90 years old and it is a large metropolis already.

Prof. SPENCE-SALES: Are you speaking of the city of Winnipeg?

Senator HOWDEN: Yes.

Prof. SPENCE-SALES: Let us take the circumstances. Winnipeg had a dramatic beginning. It grew rapidly. But within the confines of the metropolitan area of Winnipeg it has been necessary to set up a very fine planning organization, and it has really been an instrument whereby conflicting purposes within the structure of the metropolis have been sorted out in the attempt to create an ideal state of affairs. This is what a planning organization endeavours to do. It tries to assess varied and perhaps conflicting propensities in urban development and it endeavours to fit them together according to a scheme of things which envisages an overall and balanced pattern.

Senator HORNER: I would like to point out to Senator Howden that Winnipeg was not built by Manitoba, it was really built by the western provinces. It was built around the grain exchange and the stockyards, and the prairie farmer paid for everything that went into that city from the west. But now Edmonton and other cities like Calgary are replacing it to some extent.

Senator HOWDEN: Well, the need developed in the city of Winnipeg, and when that need arose it was taken care of by the local people there.

Senator BARBOUR: Does this community planning association look after the planning of towns right across Canada?

Prof. SPENCE-SALES: I think the whole Canadian picture is extremely interesting, in respect of urban planning. As a matter of fact this country is involved in a great deal of agricultural planning as well. The activity of the prairie farm rehabilitation administration is, in a certain sense, a planning agency. It is an instrument that endeavours to achieve the optimum use of land. About 10 years ago in Canada the notion of urban planning was at a low ebb. Planning was just beginning, and now I would say that almost every worthwhile municipality in the country has a planning scheme of some sort or other. Planning seems to have taken a hold of the country.

The planning legislation of almost every one of our provinces has altered a great deal in the last 10 years. The scope of activity and the intent and purposes of planning is widening. This is the realm in which your interests lie—the proper use of land entails planning. Planning mechanism has to be brought into effect to ensure that land is employed satisfactorily, and that its use complies with long-term objectives.

I would say that we are entering the phase of development in which planning is a most essential need, and an essential need not only in urban development but in regional development and perhaps also in national development, if our land resources are to be properly attended to.

Senator CRERAR: Would you expand that to the point where you would govern the operations of an individual farmer say 50 miles from Winnipeg?

Prof. SPENCE-SALES: I do not know quite what you mean by governing his operations. I am the last person who should be expressing an opinion upon that, but in the wider sense and if in the course of time our land is becoming scarce, we should take care to see to it that first class land is properly farmed and perhaps in the case of our marginal land that it might be the proper thing to see that it is used for other purposes to which it is suited.

Senator CRERAR: Is that not what they are doing in Great Britain today?

Prof. SPENCE-SALES: We are doing it in Canada to some extent. As a matter of fact, one of the most thrilling things that we have in Canada today is the growing vigour of prairie farm rehabilitation. Here is an instrument set up by the Canadian Government that is now active in almost all the provinces of Canada, I believe, with the exception of Quebec. In one way or another the service being rendered is planning—the idea of rational use, the idea of organising things properly. Though the PFRA people would probably be the last in the world to say that they have a planning complex, nevertheless I would say that PFRA is a most distinguished planning organization.

Senator WALL: Mr. Chairman, I wonder if I might project myself into some of the inferences that the speaker left in my mind. The planning of the use of our resources means more knowledge of our resources and the knowledge of present land utilization, or the best land utilization in the future, and we are up against the problem of the enormous expansion of the urban. That kind of planning and eventual control of these processes in the light of the best knowledge that we have, in the view of future attempts may be achieved by education probably among various levels of government, it must be achieved by education. But finally would you say that it must be achieved by a certain type of control, be it various types of permits for land use and so on. I cannot see how in the last analysis you could do anything else but say that some of these things the various governmental authorities will have to have some such system or something else.

Prof. SPENCE-SALES: I would certainly agree. I would say that the circumstances now emerging with regard to the use of our land for its greater productivity, for its more efficient use, will necessitate first of all an appraisal of what we have, secondly some devices whereby judgment can be made upon the proper use of land for conflicting demands, and that ultimately with the machinery to ensure proper control of the use of land.

Senator HORNER: Mr. Chairman, I would like to say that I differ from Senator Wall in this respect, that it is not greater knowledge, but it is some method whereby we can make greater use of the knowledge we already have.

Senator HOWDEN: Hear, hear.

Prof. SPENCE-SALES: Yes, what you are mentioning now is true but I am going a little further, and going very positively to the necessity of

machinery for control. I think that our circumstances are becoming so acute with respect to our many and diverse needs that we should go further than experience. It needs a planning machine to be able to conserve and to use land to its best ends, and to do so according to an objective.

Senator WALL: You pinpointed the problem of the Niagara Peninsula with fruitgrowing. We would have to be sure, if we lost that area of fruitgrowing to industrial use or urban development that we had something else to replace that area with similar fruit farms. We have not, and it is an area that we must safeguard for that kind of fruit farming. Then of course you run into a variety of problems. If I have a farm there, why should I not be permitted to sell it for $100,000 to Imperial Oil, St. Lawrence Sugar, or someone who has some use for it? Who is going to subsidize me if I am prevented from doing that by a permit system?

Senator HORNER: If I may be allowed to interpose: you spoke of the larger lots. It is quite true that, properly organized and laid out, these lots would still produce enormous quantities of fruit. You mentioned the Mennonites, living in villages. Well, give them water, and if there is no irrigation they will pull it out of the well, and they will grow garden produce sufficient for the family, and if a market were obtainable they could supply it. They are even growing tomatoes, apples and almost everything. It does seem to me that possibly a great deal of production could take place on these lots in the urban areas. Is that not so?

Prof. SPENCE-SALES: Yes. I would like to turn to the other question. I think that there is another sense of things as well. We have perhaps grown up with the notion, and it has become fairly entrenched, that there are certain absolute rights with respect to property. As a matter of fact, the concept of property is not really that. There is another understanding of property,—that you hold property as a trust. There emerges, of course, the problem you raise: what is to be done when you deprive a man of his potential wealth in land? If it is necessary to deprive a man of his land, in the national interest, as is often done under compulsory purchase orders, a mechanism is necessary to compensate him for the loss that he has incurred. But the point I think I must make is that in effect we are concerned with planning, we are concerned with the co-ordination of things, we are concerned with setting an objective for our ultimate national purposes, and that in this whole process it is inevitable, right and proper that there should be machinery, and this machinery may in our particularly complex political circumstances of federal and provincial issues have to be a very different form of machinery from that which exists, let us say, in Great Britain.

I am by no means suggesting that the experiences gained elsewhere in the world are necessarily applicable here. But what I am saying is that Canadian circumstance has developed to such a point that it is now necessary for us to recognize the issue of land use control. And the very existence of this committee surely indicates this. Perhaps for the first time in the history of this land—a senate committee faces the issue of the use of land, in a national sense. And here it is upon you. The evidence of it is everywhere. We cannot go on being promiscuous with land. We cannot go on doing things in an inept way. There are shortages, there are tremendous demands; we enter a phase of our national development in which there is no longer peace for the pioneering process. We are concerned with other things as well as individual pursuits and I think it is inevitable, therefore, that we should be regarding this whole business in terms of governmental responsibility. Of course, governmental responsibility in our land is a

diverse thing. Some responsibilities, I feel, devolve upon the federal government in this matter, and I think there are responsibilities of another order altogether that fall upon provincial governments. Of course the responsibility goes all the way down the line to even the rural authority.

Senator BARBOUR: Do you think these controls you are speaking about are necessary in a country that operates under free enterprise?

Prof. SPENCE-SALES: Well, does it, really?

Senator CRERAR: I should like to ask the witness a question here, in this way. Theoretically speaking, I do not think there is any doubt that a collective farm might employ 50 or 100 farmers under wise direction which would result in a more efficient use of the particular land area than by the haphazard, or shall I use the word "promiscuous" method that we follow today. But notwithstanding that, there are other considerations. Would you say that in carrying out your suggestions the system of collective farms would be preferable to the present method of farming?

Prof. SPENCE-SALES: I hope you will excuse me in not answering that, because, first of all, I am not an agriculturalist. But I think I might perhaps try to reply to what is implied in your question with regard to this general business of the control of the use of land. I think it has become very evident, both in the agricultural realm and in the urban realm, that there is a need for directing operations in a broad way. I think that the great and thrilling things about P.F.R.A.'s activity in the prairies were the first sense they gave us of the very nature of the land we have, that it had different qualities to it, that there were some parts that were good for farming and some parts of it that were not so good, and that in order to achieve a balanced relationship between human endeavour and natural circumstance, there came about the idea that certain areas must be well farmed, and that other areas, unsuitable for farming, should be put to proper purposes. I think that what we have heard about community pastures and the movement of people from marginal land is an extraordinarily fine illustration of the application of a stirring concept of the proper employment of land in a particular monoculture.

This carries me into urban circumstance, which raises another aspect of the proper use of land to provide a basis for appropriate living conditions. Principles which have emerged in urban planning in Canada are as eloquent as those that have developed about agriculture. They have arisen from the same sort of thinking in dealing with urban problems in a broad heroic way.

As thinking goes on and as men's ideas and experiences expand, it becomes more and more evident that in the gathering complexity of events there is the need to co-ordinate and to aspire. Let us not call it planning or an "ism" at all. Let us call it if you will, the rational process of organizing.

Senator CRERAR: I would say that the incident the witness cites which has been very successful, the work of the Prairie Farm Rehabilitation, particularly in southeastern Saskatchewan and southeastern Alberta, has been an effort to rectify mistakes that were made seventy years ago in settling those areas.

Prof. SPENCE-SALES: And more than that, it is looking forward. When people went to the prairies to farm, it seemed inevitable that dreams would come true, but it did not happen. Now we are looking forward in another way to land and its full use. It is the same in the urban scene. Once upon a time we created towns and assumed inevitable satisfaction, and now we are concerned with tremendous issues which raise complexities and difficulties. In the urban scene the aim is also land and its full use.

Senator CRERAR: For the sake of argument, granting your premise, would it not be logical to extend that all down the line? For instance, take the supervision of a number of farmers who are making a mess of their operation and say to them, "Here, you can't do this. You are not using your land to good advantage and therefore we are going to take it away from you and organize you and you have to work as we tell you."

Prof. SPENCE-SALES: I do not know whether I could really allow myself to go so far as that, but I would go three-quarters of the way with you.

Some HON. SENATORS: Oh, oh.

Senator CRERAR: That is a question which does not require an expert agriculturist to answer.

The CHAIRMAN: He said he would go three-quarters of the way with you.

Prof. SPENCE-SALES: It is not so much a question of whether you force a man to do this, that or the other thing. The issue is in terms of national interest and it is important that there be the highest productivity in the land.

Senator CRERAR: If that is so I would submit quite sincerely that agriculture could be organized under a system of collective farms under proper supervision to produce better results in the national interest than we are getting today.

The CHAIRMAN: If there is a Senator McCarthy here I would like Senator Crerar to be called before the bar of the house.

Some Hon. SENATORS: Oh, oh.

Prof. SPENCE-SALES: I would suggest that that be left to the next witnesses.

Senator LEONARD: I assume from what the witness has said that he is familiar with the Ontario Planning Act?

Prof. SPENCE-SALES: Yes indeed.

Senator LEONARD: It does to a limited extent the same thing you are suggesting might be done on a broader scale, controlling the use of land where plans are submitted and have to be approved?

Prof. SPENCE-SALES: Yes.

Senator LEONARD: Is it a fair assumption, then, that what you have in mind is an extension of what is done under a system such as that of the Ontario Planning Act, but to a broader area?

Prof. SPENCE-SALES: Yes. I would say that we have grown up in the last ten years to a very much more acute appreciation of the necessity to plan for urban purposes and for other purposes as well. We are aware of the necessity to plan. We are coming to a point of greater consciousness of this need.

Senator LEONARD: We are now doing to a limited degree what you are suggesting.

Prof. SPENCE-SALES: To a limited degree.

Senator LEONARD: People are being controlled as to the manner in which they may use their land or dispose of it. It may well cost them money because they are being controlled in this way. That is true under the Ontario Planning Act.

Prof. SPENCE-SALES: The essence of the Ontario Planning Act is the very word "planning". We are concerned nowadays with a vision or image, shall we say, with the regard to the proper organization of our land and our resources, and in order to achieve this there must be a sense of the whole and a sense of the particular. Then, within the broad sense of things, and the particulars, you must have mechanism to co-ordinate and achieve reality. I do not think it is possible in a great federated state like Canada with its complexities that the central government should exercise functions similar to

those of the government of the British Isles; but I do believe that there are some things that the federal Government should do.

Senator GOLDING: Is it not a fact that at the present time in Britain farmers will be moved off their farms if they are not able to produce what the farms are capable of producing? Somebody else is put on the farm to do the job.

Prof. SPENCE-SALES: Yes, and in the English fashion they have all sorts of delicate methods of doing it. That it is done, is so: That it is an aspect of the efficient management of land, is recognized. How they do it, is of course, the English way of doing it—rather roundabout but very effective.

Senator GOLDING: Not long ago I read an article which disclosed that a farmer had to move off his land because he was not producing what the farm was capable of producing. He was not doing what the officials thought he should do and they said that there was no use leaving that man on the land.

Senator HOWDEN: Is that not exactly what happens in this country if they do not produce?

Senator GOLDING: I am just dealing with this incident.

Prof. SPENCE-SALES: May I remark upon this for a moment. When war came along it was necessary for England to produce as much as possible, and every square inch of land counted. During that time it was Dr. Dudley Stamp's activity that led to the idea of optimum use of land. Through farming organizations, if a man was not managing his farm properly and in the best interests of the nation at war, he was moved away. I think this is now an established practice.

The misuse of land for agricultural purposes is no worse than the misuse of land for other purposes. In urban development enormous quantities of land have been destroyed. This also is a public issue in respect of the use of land which planning must endeavour to overcome.

Senator HORNER: I do not like the word "planning." I prefer a word like "organizing", and I hope we can get away from Russian terms, such as "five year plan", and that sort of thing.

Prof. SPENCE-SALES: But is it really such a Russian word, and is it such a Russian idea? It has been an idea which, as a matter of fact, we have been following for a long time. It is not a recent innovation. In this country following the first World War, the machinery of planning was set in motion. I think it was Dr. Adams who in 1917 propounded the first ideas that are the basis for our present attitudes towards agricultural land. So that when we consider planning in terms of foreign influences,—or that sort of thing, we may be getting off the rails. It is a reasonable thing to do, it is an orderly thing to do, it is a wholesome thing to do, it is an aspect of good management.

And now the last matter I would like to bring to your attention, is the ways in which the Federal Government might help in respect of the broad issues before us. Government is at the present time concerned with all sorts of important inventories of Canadian assets. Our mineral resources are now being properly and effectively surveyed. We are producing inventories of housing, soils and urban patterns. I would like to suggest that the federal Government could initiate a classification of land in Canada. It would be an involved undertaking; it would require a great deal of money. I would say that Canada needs its inventory of land, and it needs this inventory in terms of factual aspects of land. I would also suggest that it might be appropriate to establish a land utilization agency or institute. This agency or institute should be required to analyze the inventory and prepare the land classifications. It should be an independent body outside government, that has as its purpose the preparation and dissemination of information upon the

utilization of land in Canada. It would, by virtue of its abilities, and perhaps because of its independence be able to render an opinion to federal, provincial and municipal governments across Canada upon matters relative to the use of land in the national interest. Such a body will need to be helped in some ways—to begin with, financially, and perhaps only at the outset; and it should be able to enjoy the confidences of the government. Such a body would, so to speak, earn its way. It seems to me that there is a necessity to create something that is not in any respect a creature of government.

Senator HOWDEN: Hear, hear.

Prof. SPENCE-SALES: It would be an independent body with a nation-wide function and a national sense of land use. It would assist, shall we say, provincial and municipal governments in issues on land use. I suggest this because I see in it a way of bringing about an independent body with a proper comprehension of land as a whole—a body that is set up in a way that enables it to move across the board, and to guide. I believe there is a great need for an overall point of view to avoid both major and minor misuses in land.

This is the essence of the suggestions I wish to make. If there is to be a recommendation, it is that first of all, we should have an inventory—which is the factual statement of the circumstances and the use of land. Some of this we are doing already, but I do not feel that our land utilizations as such are full or complete, nor are soil surveys adequate.

After making the inventory, there is the need to classify land according to criteria that enable judgments in the balance of land uses to be made. It may not be solely criteria to solve conflicts between agricultural land *cum* urban land demands, nor would perhaps the same criteria be necessary for all parts of the country.

Then the need is to ensure that the utmost use is made of the classification of land and that it is fully employed for a great many purposes. Only an institute or agency for the Government could do this effectively. And inevitably this would help to ensure that our land resources would be most effectively utilized for the benefit of the Canadian economy.

That concludes all I have to say.

The CHAIRMAN: Thank you, very much. I suggest that since this is going to give us a lot to think about, possibly we might ask the witness to return at some future date, when we can go over his evidence carefully and question him pretty closely on some of the aspects of it. If the committee agrees with my suggestion, we can go on to the next witness.

The CHAIRMAN: Our next witness is Mr. George Spence, whom as you know, was for many years a member of the House of Commons.

Senator CRERAR: That should disqualify him from appearing before the Senate.

The CHAIRMAN: He has redeemed himself by becoming a member of the International Joint Commission and has spent some time with the Prairie Farm Rehabilitation Administration.

Mr. GEORGE SPENCE (*Member of the International Joint Commission*): Mr. Chairman, honourable ladies and gentlemen, I have divided my discussion into three divisions. I am going to attempt to outline the problem as we see it; I shall be telling you what we have done about it up to the present time; and I am going to venture some suggestions for the future. I shall confine myself mostly to my notes, not because I am afraid of questions, but because Mr. MacKenzie, who I may say is the new Director of P.F.R.A.—but that is a secret, so do not mention it—will deal with many details which I shall not

go into. It may be that if you listen closely to Mr. MacKenzie you do not need to ask questions of me. However, we will come here this afternoon and will stay with you until train time and answer any questions you may have.

The open prairie region presents a major problem in western agriculture, because of low and variable rainfall, high wind velocities and excessive evaporation, and embraces a vast area of approximately 1 million acres—more than three times the size of the Maritime provinces excluding Newfoundland.

This so-called drought area was first defined by Captain John Palliser nearly a hundred years ago in these words:

> "This central desert extends, however, but a short way into British territory, forming a triangle having as its base the 49th parallel from longitude 100 to 114 west with its apex reaching to the 52nd parallel of latitude."

Experience over the years of settlement since has shown that the low rainfall section of the prairie provinces is even more extensive than that defined by Palliser. Actually it comprises an area of approximately 1 million acres, or more than three times the size of the Maritime provinces.

Such an immense area, by reason of its agricultural instability, has presented a problem of the first magnitude to the nation.

To go back into history a bit, there were at least three major dry periods. The first one was from 1835 to 1845—my authority for that information is Dr. Charles Abbott of the Smithsonian Institute; the next period, which consisted of two or three successive years, was when Captain Palliser came out to visit this area; the next was in the 1880's. There was in 1914 a short dry period, followed by ten years of exceptional good growth. Then came the black thirties, which struct with sudden severity. It covered eight complete states and part of a ninth state in the United States, stretching 1,500 miles from north to south and 1,200 miles from east to west.

Large sums totalling hundreds of millions of dollars have been spent, over the years, in the form of relief grants. I shall give the title of this report I hold in my hand: "Rural Relief Due to Drought Conditions and crop failure in Western Canada, 1930-37" by Dr. E. W. Stapleford. I am sorry I cannot leave a copy of the report with you, because it is a library document.

Large sums, as I say, have been spent in the form of relief grants, seed grain advances, Prairie Farm Assistance payments and other forms of Government aid, provincial and federal, all because of the devastating effects of recurring droughts. The three Prairie provinces were virtually on a relief economy during that period.

Honourable senators, that is not an extreme statement; indeed, an extreme statement cannot be made about the black thirties. I see a half dozen honourable gentlemen sitting before me who know very well the dire straights in which many people at that time found themselves.

In spite of all this expenditure of public money there has been a general thinning of the farm population in the region. Abandoned farms and homes, stand as mute testimony of blasted hopes and human failure.

Anyone who lived through the great drought of the thirties can never forget the black blizzards with all the attendant distress and hardship of that period.

During some of these terrible years I happened to be a member of the relief committee of the provincial government. We had to go, year after agonizing year, hat in hand to Ottawa begging for money for the relief of distress and even for money to pay the day-to-day expenses of Government.

I remember on one occasion, during one of these visits to Ottawa, after we had concluded our grievous business with the Government, I was standing chatting with the Prime Minister, the late Mr. King. "How long is this going to go on" he asked, "is there nothing we can do, of a permanent nature, to relieve this terrible situation?" "Yes, there is", I replied, "but such measures will take time." "Undoubtedly", he replied. Then he made this further significant statement—"I think it is time we were getting started on some large projects designed to meet the situation in a more permanent way." These were Mr. King's words, as far as memory serves me to remember them.

HUMAN RESOURCES: It is right to say, therefore, that the nation has not only suffered, over the period of settlement, great economic loss, there has also been a depletion of the country's human resources.

FARMING PRACTICES: To combat the climatic conditions three systems of agriculture are practiced in the area: first, dry land farming; second, ranching —in restricted areas; third, irrigation, to a limited extent.

Dry land farming, to be successful, leaves from one-third to one-half of the cultivated acreage fallow. It is estimated that 20 million acres or more is left fallow, or idle, under this system, every year. This in itself is a great economic loss.

While the practice of having half of the cultivated acreage in fallow in each and every year has important advantages over other cropping practices, it has, nevertheless, some very marked and inherent defects; any one-crop system has, whether it be wheat, corn or cotton. One of its worst features is that it is an unbalanced and insecure system of farming. The practice of summer-fallowing half of the crop land is to conserve valuable moisture. Dry land farming is a continuous battle to conserve the precious moisture in the soil from one crop year to the next. Unfortunately it does not ensure a crop in any and every year. Obviously, it cannot conserve moisture when there is no moisture to conserve. This happens when there are several dry years in succession. The country had its worst experience of this during the great drought of the '30's. But the worst feature of the wheat-fallow rotation system is the necessity for exposing the bare surface of the soil to the deteriorating effects of sun and wind so frequently. Then, too, any system of cropping which robs the soil of its native fertility without putting anything back is a soil depleting process. A permanent and balanced agricultural economy cannot be established on that basis. While it is right to say that this wheat economy has been the main factor in building up the prairie provinces, as we have the happiness to know those provinces today, it is also true that this progress has been largely at the expense of the fertility and productivity of our rich prairie soils. I will always remember as long as I have a memory these words: "I think it is time we were getting started on some large projects designed to meet the situation in a permanent way." Now it is right to say therefore, that the nation has not only suffered over the period of settlement a great economic loss, but there has also been, and this is more important, a depletion of the country's human resources. Put it another way, we have been exporting our soil fertility and selling it by the pound in the markets of the world. It goes without saying, then, that to the degree we can strengthen the agricultural economy by greater diversification in prairie agriculture, to that degree we will also broaden the economic base of the nation and help to build a more prosperous and stronger Canada.

Ranching, or a grazing economy, based on livestock is limited to the grass lands available and—this is important—to the amount of winter feed that can be grown, both as to quality and quantity. The worst economic feature of the livestock economy is the tremendous annual loss that is incurred in the

marketing of "grass-fed" livestock—cattle and lambs—in an unfinished condition. The management and utilization of our vast grass lands is, therefore, a matter of paramount importance. I sometimes wonder if our grass lands are properly appraised for their national importance in our economy.

Irrigation, where it can be successfully practiced, is therefore the best means—indeed, the only means—of bringing grain farming and stock raising into balance in the overall agricultural economy. The fortunate circumstance is that the benefits of irrigation extend far beyond the area under the ditch. It is estimated that for every acre irrigated 20 acres of adjoining dry land will be stabilized on a livestock basis—20 to 1. The limiting factor in the practice of irrigation is the total available water supply. By provinces, Alberta has a total of 783,000 acres presently under the ditch; Saskatchewan has 200,000 making a grand total of 983,000 acres for the entire area.

It is estimated that there are available water supplies for the economic development of 3 million acres of good lands within the drought area as presently defined. Not only that, but these potential irrigable lands are strategically located so as to complement and stabilize dry land farming and bring about a more efficient use of the vast grass land areas of the region.

In the spring of 1935 the federal Government passed the Prairie Farm Rehabilitation Act. It was under the authority of this act that an administration was set up and a program of water conservation inaugurated. Two years later, in 1937, the present Minister of Agriculture, Right Honourable J. G. Gardiner, introduced important amendments which greatly increased the authority and scope of the act, and land utilization—land use—became one of the major activities in the rehabilitation program. It was at this time too, that a new policy of financing large projects was put into effect by the minister. Now, the Minister of Agriculture probably did not just hatch that matter out of his own head—there were plenty of authorities to go to, plenty of examples. The United States had made extensive investigations starting at the time that the late Theodore Roosevelt was President, and I have here a summary of the report that was made to him. It is titled "A Water Policy for the American People. Summary of Recommendations from the Report of the President's Water Resources Policy Commission." The whole report is an immense one, containing three volumes, a tremendous report. But there is a fairly good summary of it in this booklet. They worked it out on a basis little different from what we ultimately did, but the effect is the same.

Financing large projects: Benefits, both direct and indirect, accrue to the nation as a whole from the development of irrigation in dry regions. It is right and proper therefore that the nation should bear a proportionate share of the capital costs of these large dams and water storage projects. Economists familiar with this situation, both in the United States and in Canada, are now fairly well agreed on what that proportion should be.

The formula for apportioning these capital costs is based upon an appraisal of the benefits that accrue to the national, local and private interests concerned, as far as these benefits can be determined. Dr. C. S. Burchill made a most comprehensive investigation of this whole matter in the United States, and in this bulletin titled "An Historical Survey—The Development of Irrigation in Alberta", Dr. Burchill analysed all the irrigation districts in Alberta. I do not think I can give the committee a better authority. On pages 38 and 39 of this bulletin he says:

"A very rough approximation of the true distribution of irrigation benefits might be made on the assumption that one-half of the benefits of irrigation accrue to the irrigated community itself, and that the other half are spread widely throughout the nation. Of the half retained in the community, perhaps

a half goes to the irrigation farmer and his family, the remainder to the residents of local villages, adjacent communities and nearby cities.

On this assumption, one-half of the cost of irrigation development might reasonably be assumed by the national government, one-quarter assessed against the land irrigated, and the remainder recovered from local and provincial revenues."

Generally speaking, the capital works (dams and reservoirs) represent approximately half the total costs. On this basis it is now recognized procedure to charge up all the capital costs to the state and the costs of distributing the water to the provinces, which may in turn be disbursed in whole or in part by the settlers on the irrigated lands.

It is right to say, therefore, that under this policy the development of irrigation in the drought area got a new lease on life, and great progress has been made in recent years in the conservation and utilization of our water resources in the prairie region.

As presently carried on the water conservation program consists of two main divisions,

(1) Individual and community projects.

(2) Large water storage and irrigation projects.

The individual projects, dug-outs and small dams, have only a storage capacity of an acre foot or thereabouts. Community projects range from a few acre feet up to thousands of acre feet in some cases.

A total of 55,000 individual and community projects have been constructed to date. By far the greatest number of these are the small individual projects, scattered here, there and everywhere over the P.F.R.A. area. The small project is mostly for stock watering. If you will permit me, Mr. Chairman, I will give you an experience of my own. My chief qualification for addressing this honourable body is that I have been a farmer for over 40 years, right in the heart of the drought area. In those years I could have got by, I think, as far as feed was concerned, because the Government was shipping feed in, by paying uneconomic prices, but finally, in 1937, my water supply ran completely dry, and I could not water my stock. I was through; I had to sell—"give away" is more nearly right—a herd of 250 cattle I had built up over the years; and you cannot develop two herds of cattle in a lifetime; it just cannot be done.

A small percentage—though quite a surprising number—is also used for garden irrigation. The community projects are used for stock watering and irrigation. Large projects such as the St. Mary development in Alberta will bring, when completed, 390,000 new acres under the ditch.

LAND UTILIZATION: I will here supplement what the previous speaker has very well explained. In addition to the water conservation activities there is also a land utilization branch. The activities carried on by this branch of the P.F.R.A. are based on a soil survey, started in Saskatchewan back in the twenties, and now completed for the whole area.

I have not brought a soil survey map with me, because I was present at your meeting last Thursday, when the representative of Nova Scotia and New Brunswick had a soil map on the easel. Ours does not differ from that; the principle is the same. The soil classification, of course, is based on the classification of the lands: good lands, fairly good lands, lands not so good, poor lands, and non-arable or submarginal lands. We have here something else that surveyors have nothing to do with. The Great and All-wise Creator made the soil, and we made the map, which was originally produced from the conditions in this drought area. Where my hand is you see the great

farming area in the west (the Prairie provinces). Here (indicating a triangular portion near the American border) is the dry spot, the Palliser Triangle, extending as far east as Morden, up north-west to Lloydminster, and south-west to the Waterton lakes, an area roughly 50 million acres. Palliser had no records. Palliser had no guidance. He had had previous experience, because he was an explorer and went out to the Missouri country, to the great Missouri river, where he hunted during the buffalo days. So he was well-equipped, and of course he came to the country with a fully-equipped expedition, geographers, geologists, botanists; he had also a mathematician with him. I am going to tell this story about him because he was a rather remarkable man, and some day, perhaps after I retire, I might write a little bit about him. He was in the lower Fort Garry country and one time he was down by the border and he was taking particular notice of the land between the two countries. He thought there was something wrong, and he had an investigation made. Sure enough he found that the wooden marker with Canada on one side and the United States on the other was nine feet too far north, se he pulled it up and moved it where it was supposed to be and that is where it is now.

Senator CRERAR: So we lost nine feet?

Mr. SPENCE: No, we gained nine feet. This land utilization policy is based on this soil survey which has been completed. It provides a means of taking sub-marginal lands out of cultivation and then putting these lands to their best economic use, namely, pasture. The lands are first fenced, and then they are regrassed in cases where this is necessary, and a policy of controlled grazing is then followed.

I would just like to point out that I am dealing with a vast area three times the size of the Maritime provinces. There is no international boundary as far as drought is concerned. It just comes across and it does not pay any duty, and the winds blow the same way. As far as I am concerned there are no lines between the provinces. It is just one vast area.

Anyway, these pastures are commonly known as "community pastures", fo the simple reason they are made available to the community. Some 1,750,000 acres have been taken out of cultivation under this policy. The P.F.R.A. have re-grassed 200,000 acres. Adequate water facilities have also been provided. Water is a mighty important thing. It is the all-important thing next to the grass itself. All this has been provided with a view to increasing the carrying capacity of these grass lands. It has been found that an animal, say a steer should not have to walk more than two miles to get water. It is better that they only walk a mile and a half, and that is what the P.F.R.A. objective has been. They have increased the carrying capacity of these grass lands. There are, at the present time, sixty-one operating units in which a total of 110,000 cattle are grazed annually. It has taken 4,500 miles of fence to enclose and cross-fence these pasture units. The amount of fencing used could stretch clear across Canada and nearly half way back. So much for land use.

Another important part of the rehabilitation program is the cultural activities. These activities are carried on by the Experimental Farms situated within the P.F.R.A. area.

All this work is scientific. It is not something that somebody dreamed up. It is all based on scientific principles of land use and experimentation. The work in this division, is co-ordinated and carried on in co-operation with the P.F.R.A. It consists of measures for the control and prevention of soil drifting, water erosion, tillage and cropping practices, experiments with forage crops and grasses, grass land management, tree planting such as field shelterbelts

and many other activities connected with Prairie agriculture. These are all designed to determine the best cropping and tillage practices under the soil and climatic conditions of the prairie region.

The great central fact that must be faced, if we are ever to solve the problem of Prairie agriculture is not a lack of soil fertility, as is the case in some regions. The limiting factor in crop production, on the Great Plains, is a shortage of moisture, rainfall. That, Mr. Chairman, is the real problem, compared to which all other problems fade into nothingness.

There are crop failures and near crop failures, over a vast region, which always threaten from this cause and which lie like a great blight on the whole economy of the nation. There is no question about that whatever; that is why it is a national problem.

The reasons are not only good but compelling, that we should conserve every drop of the available water supplies and put the same to beneficial use in an effort to vitalize and strengthen the agricultural economy not only of western Canada but of Canada as a whole.

I affirm, Mr. Chairman, that a country, any country, cannot enjoy full and complete prosperity while one great section of its social and economic life is in difficulty and distress. While it is true that much has been accomplished, by the P.F.R.A., it is equally true that much still remains to be done. If I may be specific in this connection, irrigation in Saskatchewan is limited to small individual and community projects embracing a total of approximately 200,000 acres. This work must go on. But even with the full development of these comparatively small projects, only a small addition can be made to the present total owing to the lack of available water supplies from these very limited sources—ponds, small streams, water courses and the like.

The only large scale irrigation that can take place in Saskatchewan is from the waters of the South Saskatchewan River, with a total average annual flow of 7,000,000 acre-feet or 95% of the run-off in the central and southern part of Saskatchewan—within this great drought triangle. Until these waters are harnessed and applied to the dry lands in the area we can never say that all the available waters have been developed and put to beneficial use to help balance and stabilize the agricultural economy of the province.

The fact that irrigation started, and became well established in the province of Alberta long before irrigation was practised, even on a small scale, in Saskatchewan, was not due to a lower rainfall in southern Alberta—indeed the reverse is the case. In some localities where irrigation is now being practised on a large scale, in southern Alberta, the rainfall is greater, much greater, than is the rainfall in areas that can be irrigated in Saskatchewan from the South Saskatchewan River.

The proposed South Saskatchewan River development is one such area. Dr. Currie, Ph.D., of the University of Saskatchewan, is my authority for that statement. The charts which you see on the frame are further proof of this fact.

Why, then, did large scale irrigation start in Southern Alberta? The answer is very simple. The rivers came out of the mountains at a higher elevation and could be more readily and more economically diverted to the adjacent dry lands because the waters of these rivers had not yet cut down to any great depth below the level of the plains. Low dams were built at that time to irrigate lands suitably located and to allow irrigation at low cost. These projects were not designed to store an adequate water supply, in most cases, and no thought was given to overall basin development, or the full use of the waters available.

Experience has shown that adequate storage facilities are indispensable to insure success of large scale developments.

Sometimes this means high dams.

Modern engineering applied to the construction of earth dams made this objective possible on alluvial streams and rivers.

The St. Mary River Dam completed in 1951, with a storage capacity of 300,000 acre feet, is an example of an effort to provide an adequate water supply to irrigation districts depending on that river for their water.

SOUTH SASKATCHEWAN RIVER DEVELOPMENT: The proposed South Saskatchewan River Development, of which a high earth dam on the main stem of that river is the key structure, is undoubtedly the best example, in recent times, of long range planning and the careful selection of a site to meet all requirements, namely, reasonably good foundation conditions, storage (7,000,000 odd acre feet), flood control, power, water supply for domestic and industrial purposes and, last but not least, an adequate water supply to irrigate an area of half a million acres, or more, of dry lands lying immediately adjacent to the reservoir. It is not claimed that even with full development of this project there will be an end of the drought problem on the high plains. It is claimed, however, that the problem will be largely overcome during anything but the most severe and protracted droughts just as irrigation has overcome this problem in southern Alberta.

We do not have to go far afield to find the reason for making that statement.

It is also claimed: that it will put to beneficial use a great natural resource presently running waste to the sea; that it will put a green belt right through the heart of the triangle, stretching all the way from Cardston in the west to Saskatoon in the east; that it will greatly increase the yields and varieties of crops that can be grown under irrigation in the area; that it will stabilize prairie agriculture on a livestock basis by utilizing to the maximum the vast grassland areas, to a total of at least ten million acres, within the orbit of its influence; that it will bring about a great increase in the population of the whole area and provide employment and new opportunities in the trades and professions.

I now wish to read from a report which covers the subject of population, land use, irrigation areas, and social and other aspects: it is entitled, "St. Mary and Milk Rivers Water Development Committee".—"Report on further storage and irrigation works required to utilize fully Canada's share of international stream in southern Alberta." The following paragraph appears on page 52:

"The population density averages more than 66 persons to the square mile or nearly twenty times the population density of the dryland areas."

These figures are startling, yet they are facts; nobody would dream them up.

It is reasonable to expect the same degree of progress and prosperity in southwestern Saskatchewan as that which has been attained in southern Alberta where irrigation has been practised for upwards of fifty years.

All the factors making for such prosperity are present, good irrigable lands, grazing areas within reasonable proximity, road and rail facilities and the benefit of local markets which such centres of population as Saskatoon, Moose Jaw and Regina, will provide.

Stated in another way, the proposed south Saskatchewan River Development is part and parcel of an overall plan to utilize to the full a great natural resource presently running waste.

It is part of an overall plan, it is not some isolated thing. I sometimes hear people mention "that dam in Saskatchewan" as an isolated project, having nothing to do with anything else. It is part of a plan, it is a link in the chain.

The proposed Red Deer River Development with upwards of 500,000 acres in East Central Alberta and western Saskatchewan is another example of these large scale irrigation developments. Developments, designed to stabilize the farming and livestock industry, so that the land of failure and blasted hopes, will become a land of promise and opportunity. New wealth will be created to support and strengthen the whole economy of the nation.

In summary then, there is, first and foremost, human resources—the people. Next in importance is the land resources and with that goes also the water resources. These three are the greatest of any nation's resources. It is the best part of wisdom, and statesmanship, to develop the land and water resources for the full benefit and enjoyment of the people. Surely not a task beyond the resolution and determination of a young and rapidly growing country.

I have endeavoured to outline, Mr. Chairman, as briefly as I can, the main problem in prairie agriculture, together with the means employed to meet and cope with the problems.

What of the future? Where do we go from here?

If I may be so bold as to make some suggestions based on the forty odd years of practical farming experience in the heart of the low rainfall area, the following is what I would offer.

(1) The work of the P.F.R.A. should continue as at present. There should be no curtailment of any of the organizational activities until the objectives for which it was established have been achieved.

(2) That the P.F.R.A. water development program be expanded for the development of large-scale irrigation developments, in orderly and progressive stages as far as it is economically feasible so to do, until all available water supplies now running waste have been harnessed and put to beneficial use on the dry lands of the prairie region.

(3) That the construction of the proposed South Saskatchewan River Development be undertaken and pressed to completion at the earliest possible date, in furtherance of the over-all plan designed to ameliorate the ravages of periodic droughts. We have enjoyed a succession of years when the precipitation has been above normal. It may well be that time is running out.

As you know, there is already a drought progressing northward from the south. May I say with respect to the next paragraph that had I heard the speech given earlier this morning before preparing this recommendation, I would have written it in another form. However, I am going to give it to you as I prepared it.

(4) That consideration might be given, at this time, to an extension of the Prairie Farm Rehabilitation Act to include all the provinces. A Canadian Farm Rehabilitation Act could be administered on a regional basis just as the P.F.R.A. is now. All the activities of such an administration could be co-ordinated under a director or other departmental head here in Ottawa.

Now, Mr. Chairman, and honourable gentlemen, I have a special request to make. A request which, I venture to assert, is within the full power and competence of this honourable body to grant. My request is this, that you, Mr. Chairman, and all the honourable members of this committee make an inspection trip of the area, this coming summer, July or early in August would be the best time. All arrangements including transportation will be looked after, we will even feed you if we have to.

We will show you the dry land area, also the sections under irrigation. If it happens to be a wet year you will see wonderful stands of growing crops and a green country-side—and everybody will be happy. But if it is a dry year the whole country-side will be parched and brown and the people

will be in distress! You will step—yes, step is the right word—from that depressing condition into green fields and green pastures—a veritable Garden of Eden by comparison. The line between the two conditions, sharp and distinct, will be an irrigation ditch!

SUPPLEMENTARY STATEMENT: As the proposed South Saskatchewan River Development is a multipurpose project which involves among much else, the generation of electrical power; there are certain financial considerations which have to be ironed out between the provincial and the federal governments before work on the project can be started. The generation and distribution of power is the business of the provincial government. Power is, moreover, a self-liquidating expenditure. The federal Government will, therefore, not subsidize power by paying the full costs of the dam and appurtenant works —it would not be right that it should. Agreement on the proper apportionment, chargeable to power, must be reached.

That concludes my paper.

The CHAIRMAN: We will rise now until 2.15.

The committee adjourned at 1 p.m. to resume at 2.15 p.m.

AFTERNOON SESSION

THURSDAY, March 7, 1957.
2.15 P.M.

The CHAIRMAN: Are there any questions members wish to ask Mr. George Spence?

Senator CRERAR: Mr. Spence, have you any information as to the amount of wealth produced within the Palliser triangle in Canada over the last 50 years?

Mr. SPENCE: Senator Crerar, I did go into that at one time some years ago, and as far as grain is concerned it runs into billions of dollars, something in the neighbourhood of $10 billion.

The CHAIRMAN: Thank you Mr. Spence.

Gordon L. MacKenzie, Chief Engineer, Prairie Farm Rehabilitation Administration, called.

The CHAIRMAN: Mr. MacKenzie, I understand you are the Chief Engineer of the P.F.R.A. at the present time?

Mr. MACKENZIE: That is right. I am a civil engineer by profession, a graduate in engineering from Queen's University, a member of the Engineering Institute of Canada and a registered professional engineer of the province of Saskatchewan. In addition to that I am a Dominion Land Surveyor and a Provincial Land Surveyor for the province of Saskatchewan. I practiced in Western Canada almost ever since I graduated. I went West in 1920. I practiced with a firm of consulting engineers in Saskatchewan until 1934 and at that time I joined the engineering staff of the federal Department of Public Works. I joined the Prairie Farm Rehabilitation Administration in May of 1937 and I have been the chief engineer of that administration since, I believe it was, 1945.

Mr. Chairman, like Mr. Spence and for the same reasons I propose to stay fairly close to a prepared statement. This morning Mr. Spence discussed the background of the Prairie Farm Rehabilitation Act, stating that it was passed in 1935 with the object of minimizing the problems of drought and soil drifting. This whole problem at that time was recognized as a national problem. He

described how the program included cultural work, land utilization and water conservation. He told you how the present Minister of Agriculture, Rt. Hon. Mr. Gardiner, had the act amended in 1937 to provide for resettlement and rehabilitation of farmers from those areas where land was unsuitable for crop production. Mr. Spence also described how many acres of these lands were converted, with the co-operation of the provinces, into community pastures.

Before I proceed further I want to refer again to the boundaries of the prairie farm rehabilitation area as it is called, and that boundary is the area to which the act and the funds appropriated by Parliament to carry out that act are limited. Later on during my presentation I will be referring to other projects which, you will see, are obviously outside that line as shown on the map. Those projects, in every case, are provided for by special votes of funds by Parliament, and by special agreements with the provinces or organizations concerned. As a background to our understanding of the problem I would like to briefly describe the water supply situation on the prairies. You have seen the chart showing the average annual precipitation. It is obvious that any area on which the average annual precipitation is from about 11 inches to about 19 inches will produce very little total run-off. As a matter of fact, the average annual evaporation from an equivalent open water surface would be twice as great as such annual precipitation. Therefore, the principal sources of the water of our permanent streams are the mountains and foothills of western Alberta and the Cyprus Hills in southeastern Alberta and southwestern Saskatchewan. These mountain streams flow in shallow valleys near their source, but as they flow easterly they have gradually eroded the channel until, in the case of the north and south Saskatchewan rivers, they flow through the province of Saskatchewan in valleys up to 200 feet depth and they join together in Saskatchewan and terminate in Lake Winnipeg. Before entering that lake, the stream has created, over the ages, a huge delta area of rich alluvial soils. The numerous local streams throughout the prairies are intermittent. Most of them carry substantial flows, and sometimes damaging flows during spring run-off. Beyond that it is only in the event of the infrequent and usually very local rain storms that they carry much water.

The geological origin of the country is glacial and there have been several glacial periods, all of which have left their mark. This has resulted in a heterogeneous mixture of subsoils. It varies from the very dense glacial till to beds and deposits of gravels and sand and huge and very fertile alluvian lake-bed deposits such as the Red River Valley in Manitoba, and the Regina and Rosetown plains in central Saskatchewan. Of those deposits only the lighter sands and gravels are likely to contain an underground water supply. The glacial tills and the alluvial soils are very water tight, and what water they do contain is usually too alkaline for use either for stock watering or domestic purposes.

P.F.R.A. PROGRAM: When the Prairie Farm Rehabilitation Act was passed in 1935 we were already in the midst of a protracted drought, and an emergency already existed. The crux of the situation was the almost complete failure of the country's stock watering supply. For that reason the first problem was one of developing local water supplies for immediate use and then to proceed with the development of the larger and more comprehensive storage works for the conservation of water and for its application to the land.

Because of the lack of underground sources and underground supply of water, a program of assistance to the farmers for capturing surface water was initiated. It consisted of technical advice and financial assistance to the individual farmers or groups of farmers for the construction of dug-outs and small dams. This was a self-help program, which is still going on. Under

the program the application for assistance originates with the farmer. Inspections are first carried out to ascertain and advise on the location and subsoil tests are made to be certain that a dugout would retain water. Certain specifications are required to be met, particularly as regard to depth—12 feet is specified as a minimum. The purpose of that specification is to provide, as far as it can be, water sufficient for two or three dry years. When these specifications are met, and when the farmer has completed the work, he is entitled to a contribution of 4.5 cents per cubic yard for the value of the excavation, up to a minimum of $125.

If his application is for a dam, his site is inspected and if it is suitable and if the drainage area is sufficient, he is provided with plans and specifications as to how to construct it. Upon satisfactory completion, he is entitled to financial assistance at 4½ cents per cubic yard for the material in the dam and 25 cents per cubic foot for rock rip rap, all up to a maximum of $150.

The cost of the dug-out is about three times as much, so the assistance amounts to perhaps one-third.

Senator HOWDEN: That dug-out you are talking about, is that merely for water supply for cattle?

Mr. MACKENZIE: Sometimes they use it for domestic water supply. They will put a filter in, and an intake.

Senator HOWDEN: It does not play any part in fertilizing the land at all?

Mr. MACKENZIE: Only for irrigation? Yes, in some cases it does. I was going to mention that along with the individual provision. It seems they frequently pump from these reservoirs to water their gardens. It is not large enough to irrigate any sizeable area of land.

Senator HOWDEN: It does not play any part in the grazing of cattle?

Mr. MACKENZIE: No, only in supplying water for the cattle. We have put in a lot of these dug-outs in the community pastures as a source of water for the cattle.

Senator HOWDEN: They are all up and down the Red river from Manitoba to the boundary.

Senator HORNER: Have you had any experience where the soil is not suitable for holding water? Have you tried a coating? I was reading that, perhaps in the United States, they are testing out things.

Mr. MACKENZIE: Yes, Senator Horner, we are carrying out quite a program of experimental work to determine the most feasible way of improving the water retention capacity.

Senator HORNER: Because many of our soils will not hold water.

Mr. MACKENZIE: We have a coated one at Outlook, on our demonstration farm, and we are trying everything, from clay, bentonite, asphalt lining, and finally, in an experimenal way, with the co-operation of two manufacturers, a product which is not on the market, a plastic type of lining, one of which we have got in our dug-out at Outlook, and it is very promising as far as results are concerned; but it is going to be expensive.

Senator HORNER: It is giving good results?

Mr. MACKENZIE: Yes, so far.

Senator HOWDEN: Would the Red river water be good for these dug-outs?

Mr. MACKENZIE: The largest concentration of dug-outs we have got in the P.F.R.A. area lies in the municipality of Rhineland, in southern Manitoba.

Senator HOWDEN: But is that taken from a bore, or is it taken from the Red river?

Mr. MacKenzie: No, these dug-outs are filled with the surface run-off, usually in the spring. Efforts are made to improve the supply by the construction of windbreaks and such, to trap the drifting snow in the wintertime.

Mr. Spence: They have to have a certain minimum drainage area before the Government will give any assistance.

Mr. MacKenzie: That is where the assistance comes in. That is the most valuable part, perhaps, of our contribution—the advice we give them as to the location. We choose the place where there is some local surface drainage likely to accumulate.

Individual Irrigation Projects: In the case of many individual dams, some local garden irrigation is possible. Frequently the farmer is totally unaware of these possibilities, until pointed out by our inspectors. Where the project is one of local irrigation, he is entitled to financial assistance up to $350.

Neighbour Projects: Where two or more farmers find it to their advantage to pool their water resources, financial assistance may be provided on the same unit basis as for an individual project, but to a maximum of $500. That is what we call a neighbour project.

Small Community Projects: Application for smaller community projects may be submitted by either municipalities or other legally constituted bodies, such as Water Users' Associations. In such cases they may be given financial assistance on the basis of cost, where approved and authorized by the Minister of Agriculture. When such applications are approved, the local authority assumes responsibility for carrying out construction and for the maintenance and operation when it is completed.

Large Community Projects: Because of the intermittent nature of the flow of the prairie streams, it is necessary in order to make the full and best use of the available water, to develop larger reservoirs to capture and hold the peak flows. Because the irrigable lands frequently lie in concentrated areas, it was also advisable to carry out a program of larger community irrigation projects. In the case of a reservoir, its use is to regulate the flow of these streams by capturing the high flows and to deliver the water back to the stream as a regulated flow to serve the individual and small community projects down stream. This includes both stock-watering and irrigation. It may also be used to supply water for a large community irrigation project, of which we have quite a number. Such projects are dealt with according to the agricultural merits of each after complete surveys and engineering investigations have been carried out. All sizeable work of this category is carried out by contract under supervision of an engineering staff.

Accomplishments: As Mr. Spence has stated, this program to date has resulted in the construction of about 55,000 individual dug-outs, stockwatering dams and irrigation projects through the P.F.R.A. area. It has also resulted in the construction of about 400 community projects, varying in size up to a capacity of many thousand acre feet. An acre foot is a measure of volume, the amount of water which will cover an acre of land to one foot in depth.

Senator Howden: We have a flooding evil in the Red River in Manitoba every year. If we could tap it and use some of the water for irrigation it would help a lot.

Mr. MacKenzie: Yes, it would. I am very familiar with the flood problem, because I was required to report on the Red River problem after the 1950 flood.

The construction of these projects has resulted in the solution of the water supply problem for many thousands more farmers through stream flow regulation, and the rehabilitation of thousands of other farmers through the

development of the community irrigation projects through the feed and fodder produced. The cost to Canada of this program from 1935 up to March 31, 1956, has been about $50 million.

COMMUNITY PASTURES: Mr. Spence has described the community pasture program, which was designed to permanently remove from cultivation, and put to better use, lands which are unsuitable for dry land farming. This program is carried out in co-operation with the provinces, who make the land available. It requires, of course, reasonably large areas in a unit and if any families are still struggling to live in the area, assistance is given to them to move to other lands or to irrigation projects. This is part of the resettlement program and has resulted in the successful rehabilitation of a great many farmers. Under an agreement they are required to turn over their original holdings to the Government when they are moved.

As Mr. Spence has stated, there are now 61 of these community pastures in operation under the control and supervision of the P.F.R.A. The areas are fenced and all modern pasture facilities are provided. Up to the present over 1,700,000 acres are included in these sixty odd pastures.

The CHAIRMAN: Who has title to that land?

Mr. MACKENZIE: The title is vested temporarily in the crown and in Canada, but it is subject to return to the provinces if the pastures are ever returned to their control. Farmers in the area served by each pasture are permitted to put their stock in the pasture at a nominal rate designed to meet operating costs. The present grazing rates are: 75c. per month for cattle and $1.00 per month for horses. There are other rates for other stock but I do not happen to have them with me. In addition to constructing the facilities, an extensive regrassing program has been and is being carried out as well as the development of water supply and flood irrigation for the improvement of the land for pasture and to increase the pasture carrying capacity. The Government also supplies a full breeding service, and vaccine and other services at nominal charges. In 1956, for instance, 860 pure-bred bulls were in service in the pastures.

In 1956 the pasture patrons numbered in all about 6,000. In each pasture they form a local advisory committee which assists our pasture manager in determining who should have the benefit of the pasture facilities if there are more requests than we can handle for a particular year. The pasture work is continually being expanded. The capital outlay to March 31, 1956, was about $4½ million.

LARGE PROJECTS: The initial program of the P.F.R.A. was designed to meet the then existing emergency. With that program under way the next step was to consider and plan a program of long term and more extensive rehabilitation through large water development projects.

Policy for carrying out such work was provided by Order-in-Council P.C. 2298, dated June 19, 1947, the pertinent clauses of which are as follows:

> 1. Before Canada undertakes the construction and operation of a project it will be necessary for the Province in which the project is located to enter into an agreement;
>
> (1) to transfer any water rights required for the construction and operation of such project;
>
> (2) to make available to Canada any Provincial Crown Lands which may be required for dam site, reservoir or canal right-of-way purposes in connection with such project;
>
> (3) under which the water will be utilized by the Province or some other authority or organization on the terms set out in such agreement.
>
> Thereafter, Canada will at the cost of Canada proceed with the construction of its share of the project at the earliest possible date.

2. Canada will operate any project constructed pursuant to this policy in such a way as to maintain so far as possible the minimum flow determined by the Prairie Provinces Water Board for the stream upon which the project is constructed.

3. Canada will make a legal survey of any lands necessary for the construction, operation and maintenance of the portion of any project to be constructed by Canada pursuant to this policy and will file a plan or plans of such survey in the appropriate Land Titles Office and in the Water Resources Office of the Province.

4. In the construction of an irrigation project hereunder Canada will undertake and assume responsibility for the construction of the main reservoirs and any connecting canals, and will be responsible for the maintenance and operation of such works; Canada will deliver to the Province such water as it is agreed the Province will utilize at such place and for such fee as may be agreed upon between Canada and the Province. If the Province does not desire to utilize all of such water Canada may enter into arrangements with others for the delivery and use of any water not taken by the Province.

Senator LEONARD: Would that be the type of agreement under which you are doing the Carrot River project?

Mr. MACKENZIE: No. These are for projects within the P.F.R.A. areas. We are engaged in other projects, which I mentioned earlier and which I will point out on this map, projects like the Carrot River project. These are under special agreement and are carried out by votes from Parliament and not under the P.F.R.A. vote. But we do do the engineering on all those projects. That is part of our service.

Surveys have been made of a large number of these major projects and many of them have been or are being constructed. I can only touch briefly on them because each one could be the subject of a long discussion. I will mention a few of them briefly in passing. The first one is the St. Mary Irrigation Project for the development of 510,000 acres of irrigation in the Lethbridge-Medicine Hat area of Southern Alberta and which includes such major structures as the St. Mary Dam, the Waterton Dam, the Belly River Dam, the Ridge Reservoir and the connecting canals. The St. Mary Dam, which is completed, is a 186 foot high earth fill structure with a concrete spillway of 60,000 cubic feet per second capacity. The Ridge Reservoir is also completed. The main connecting canals, which have capacities up to 3,500 cubic feet per second, are partially completed and partly under construction. The province of Alberta is carrying out the construction of the distribution system and about one-half of the land in the project is now under the ditch. We provide, as part of our share of the agreement, the engineering service.

Senator CAMERON: Are they making any progress with the Americans over the Milk River watershed?

Mr. MACKENZIE: No. That reference has elapsed.

Canada's expenditure to March 31, 1956, has been $14,862,000 with respect to the St. Mary Irrigation Project. Alberta's expenditure on the project has, I believe, been approximately the same. P.F.R.A. is supplying the engineering services for the Alberta share of the work. The Alberta Government is going along with its share of the work and it has the distribution system about half completed, I would say, and about half of the land at the bridge is under the ditch. I believe their expenditure at the present time is the same as ours, and our expenditure on the project to date as of March 31st last is $14,000,862.

Another major project is the Bow River project, west of Medicine Hat. This is an irrigation project taken over by Canada from the Canada Land and

Irrigation Company, which had plans for the irrigation of 240,000 acres of first class land. The company was financed by British capital, but because of the war and because of other difficulties work had been suspended after about 57,000 acres had been developed. Canada purchased the assets of this company, and in 1951 PFRA commenced the orderly rehabilitation of the works of the project and is proceeding with the development of the remainder of the area.

Then there is the Saskatchewan River Reclamation project. This is the reclamation of an area in the delta of the Saskatchewan River near The Pas, in the province of Manitoba. It would involve the reclamation of about 1,000,000 acres of land lying partly in Manitoba and partly in Saskatchewan. Reports are just now being prepared.

Senator HORNER: That is chiefly drainage?

Mr. MACKENZIE: Chiefly drainage, yes.

Senator HORNER: And it is wonderful land.

Mr. MACKENZIE: One section of it, known as the Pasquia area, involving 135,000 acres, in Manitoba, is under construction, through special agreement. The work consists of dyking and drainage. Canada's share of this portion of the Pasquia area is nearing completion and the area will be ready for settlement in the near future. This area had been investigated and surveyed in a preliminary way in the early twenties by the old Reclamation Branch of the Department of the Interior at the request of the provinces of Saskatchewan and Manitoba, and we carried out investigations as to what it would cost and whether it would be feasible in the way of development. The report is just now being prepared, and will be a report on the whole area. Shortly after our investigations the province of Manitoba suggested that we go ahead with a portion of the area which, for the sake of differentiating it from the main area, we call the Pasquia area project. By special agreement with the province of Manitoba special funds are being appropriated for the purpose, and we share in the cost of the construction of that work.

Senator HORNER: Could it not be done by deepening the channels of the river?

Mr. MACKENZIE: No, that would be too big a proposition. The Saskatchewan river is involved, and we would have to lower the river to the point where the bottom is pretty rocky area. Our share of this construction of the project, incidentally, is nearing completion, and the remainder will be ready for settlement under the direction of the province of Manitoba in the near future. In connection with that project, also, we are sharing in the revenue from the sale of any Crown lands that exist in that area, and they are nearly all Crown lands. To be exact, we recover 75 per cent in revenue from the sale of lands.

We have a project for the reclamation and protection of the eastern slopes of the Riding and Duck Mountains, in cooperation with the province of Manitoba. This area suffers from destructive floods and soil erosion. Valuable farm lands are being destroyed by the floods and erosion and from the resulting deposition of silt and shale from the mountain slopes. A programme of reclamation is under way, financed jointly with the province of Manitoba. Surveys and Engineering Services are supplied by P.F.R.A.

We have a programme also for protection of lands on the lower Assiniboine River in Manitoba. This is a projcet which involves dyking and channel improvement of the Assiniboine river between Portage La Prairie and Headingly. It was originally a project being carried out by the federal Department of Public Works, but was taken over by the Department of Agriculture in 1950. It serves to protect tens of thousands of farm land from overflow flooding of the Assiniboine river. This project was begun in the early days of the century, or

perhaps earlier, because the Assiniboine river at that time was a navigable stream, and the purpose was to improve and maintain navigation on that part of the river.

Senator HOWDEN: It is still a navigable stream?

Mr. MACKENZIE: Yes, I would say so. As I have said, the project serves to protect tens of thousands of acres of farm land; it is not a case of flooding as in a valley, but once the water escapes from the river it goes helter skelter over to the Red River.

Now, by special agreement we have completed a reclamation project in the Lillooet Valley in British Columbia. This project included river channel improvement, dyking and drainage of a valuable agricultural area at Pemberton. The project has resulted in the protection of the land that was under cultivation and which was subject to almost continuous flooding and the reclamation of about 14,000 acres of additional land. In all, about 30,000 acres of very high class lands were salvaged.

We have also constructed numerous irrigation projects in Central British Columbia. Again, these were engineered by P.F.R.A., and constructed in cooperation with the Department of Veterans Affairs under V.L.A. for the settlement of war veterans.

These are only some of the major projects that are completed or are under construction. Other major projects which are under survey, including such irrigation projects as the Red Deer River project, which is a modification of the William Pearce project in Central Alberta, and the South Saskatchewan River project in Central Saskatchewan. I will not attempt to describe them here, except to say that the Red Deer project would irrigate about 500,000 acres of land, and the South Saskatchewan River project would irrigate another 500,000 acres of land.

CONCLUSION: As Mr. Spence has pointed out, there are now about 980,000 acres of land under irrigation in Alberta and Saskatchewan, and it is estimated that there is land and water supply for the economic development of an ultimate area of 3 million acres.

PRAIRIE PROVINCES WATER BOARD: The main rivers of the prairies that furnish the available water supply are inter-provincial in character. In 1930 when the resources were returned to the provinces, the control of the water was vested in each province. This has given cause for concern because of the possibility of conflict over the use of the water as has happened between several states in the United States.

The reliable source of water in those streams are the slopes of the Rocky Mountains; the water flows across the prairies in two main streams, the North Saskatchewan and South Saskatchewan Rivers, but there is relatively little contribution to the streams, and the water is finally delivered in Manitoba where it causes as much harm as it does good. So, there was a possible conflict in the uses of that water.

As a measure designed to head off any conflict, a board known as the Prairie Provinces Water Board has been set up with authority to study and recommend the most beneficial use of the water. They do not have judicial authority, but only authority to recommend; their recommendations are not carried into effect until an Order in Council is passed by the province concerned. The Board consists of five members. Two of them are federal and one from each province. The P.F.R.A. supplies the engineering services through the engineering secretary. The chairman has been the director of P.F.R.A.

ADMINISTRATION: All of the work which I have described in rather sketchy detail is administered under the Prairie Farm Rehabilitation Administration of the federal Department of Agriculture. The head office is in Regina, Saskatchewan. It is under a director, who is responsible to the Deputy Minister of Agriculture. The staff employed varies with the seasons. In August of last year there were 1,050 employees. Of these 129 were non-graduate technicians, and 73 were clerical employees; 177 were year-round unclassified staff and 371 were seasonal employees.

The engineering services are staffed with highly qualified specialists in the fields of soil mechanics and foundations, hydrology, hydraulics and structures, engineering geology, air photo interpretation and soil surveys, topographical surveys, drainage and finally construction. We have a drainage laboratory in Vauxhall, and we have one of the best soil mechanics laboratories in Canada located in Saskatoon at the University of Saskatchewan. We also have an hydraulics laboratory in Regina. We have an air photo library in Regina which contains vertical aerial photographs of practically all of the settled areas of the three prairie provinces, and a staff skilled in air photo interpretation and topographic mapping from aerial photographs.

Mr. Chairman, this will give you some idea of the work we are carrying out and the facilities we have for doing it. There are many features of our work which I have only touched upon. I would refer your committee to the annual report of P.F.R.A., which goes into considerable detail to explain our aims, objectives and accomplishments.

I should like, Mr. Chairman, to second Mr. Spence's hearty invitation to your committee to come out and review our work in the field. I think that is the only way you can get a real grasp of it. We would be only too glad to make all our facilities available to you.

The CHAIRMAN: Thank you.

Senator CRERAR: What are the total expenditures of the P.F.R.A. from its inception down to the present time?

Mr. MACKENZIE: For P.F.R.A. activities, $50 million, I think. We have votes for other projects, and sometimes there are special appropriations.

Senator CRERAR: That includes special appropriations?

Mr. MACKENZIE: No. The expenditure by P.F.R.A. of $50 million is under the P.F.R.A. proper.

Senator CRERAR: Including the special appropriations how much would you spend?

Mr. MACKENZIE: Today our estimates for 1957-1958 are a little more than $12 million.

Senator CRERAR: That would mean the total would be something over $60 million?

Mr. MACKENZIE: I am informed the total is about $120 million.

Senator HOWDEN: You said, I think, that the Prairie Farm Rehabilitation activities extend down in the province south of Winnipeg?

Mr. MACKENZIE: They extend to the international boundary on the south, and east of the Red River in the easterly part of Manitoba.

Senator HOWDEN: For the last southerly 50 miles in Manitoba the problem in such towns as Carman, Gretna, and other places.

Mr. MACKENZIE: At times only that is so. There is a real water problem in such towns as Carman, Gretna, and other places.

Senator HOWDEN: That is true, but farther south they have too much water.

Senator BARBOUR: Are the pastures fenced?

Mr. MACKENZIE: Yes.

Senator BARBOUR: And there is good grass?

Mr. MACKENZIE: The pastures are all fenced and there is a real grazing program carried on.

Senator BARBOUR: The charge of 75 cents per month does not seem too expensive.

Mr. MACKENZIE: It meets the operating cost.

Senator HORNER: If there are young calves, they are charged for too.

The CHAIRMAN: Honourable senators, I will call to your attention the fact that it is now 3 o'clock and, although we would like to ask further questions of Mr. MacKenzie and Mr. Spence, His Honour the Speaker expects to see us in the chamber within a few minutes.

The committee adjourned until Thursday, March 14, 1957, at 10 a.m.

1957

THE SENATE OF CANADA

PROCEEDINGS

OF THE

SPECIAL COMMITTEE ON

LAND USE IN CANADA

No. 5

THURSDAY, MARCH 14, 1957

The Honourable C. G. Power, Chairman

WITNESSES

Mr. J. A. Vance, Chairman of the Board, Canadian Forestry Association.
Mr. G. Harold Fisk, President, Canadian Forestry Association.
Mr. J. L. Van Camp, General Manager, Canadian Forestry Association.
Mr. W. A. E. Pepler, Manager, Woodlands Section, Canadian Pulp & Paper Association.
Mr. L. Paquet, Chairman, Executive Committee, Canadian Forestry Association.
Mr. E. Porter, Manager, Quebec Forest Industries Association.
Dean J. W. B. Sisam, President, Canadian Institute of Forestry.
Mr. Angus Hills, Chairman, Committee on Soils & Land Use, Canadian Institute of Forestry.

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

87393—1

SPECIAL COMMITTEE ON LAND USE IN CANADA

The Honourable C. G. Power, Chairman

The Honourable Senators

Barbour
Basha
Boucher
Bois
Bradette
Cameron
Crerar
Golding
Hawkins
Horner
Inman
Leger
Leonard
McDonald
McGrand
Molson
Petten
Smith (*Kamloops*)
Stambaugh
Taylor (*Norfolk*)
Taylor (*Westmorland*)
Tremblay
Turgeon
Vaillancourt
Wall

26 Members—Quorum: 7

ORDER OF REFERENCE

Extract from the Minutes of the Proceedings of the Senate

WEDNESDAY, January 30, 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, Golding, Hawkins, Horner, Inman, Leger, Leonard, McDonald, McGrand, Molson, Petten, Power, Smith (*Kamloops*), Stambaugh, Taylor (*Norfolk*), Taylor (*Westmorland*), Tremblay, Turgeon, Vaillancourt and Wall;

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.

87393—1½

MINUTES OF PROCEEDINGS

THURSDAY, March 14, 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 McDonald, Deputy Chairman; Barbour, Basha, Boucher, Bois, Bradette, Crerar, Golding, Hawkins, Horner, Inman, Leger, Leonard, McGrand, Molson, Smith (*Kamloops*), Taylor (*Norfolk*), Turgeon, Vaillancourt and Wall.—20

In attendance: The official reporters of the Senate.

The following were heard:—

Mr. J. A. Vance, Chairman of the Board, Canadian Forestry Association.
Mr. G. Harold Fisk, President, Canadian Forestry Association.
Mr. J. L. Van Camp, General Manager, Canadian Forestry Association.
Mr. W. A. E. Pepler, Manager, Woodlands Section, Canadian Pulp & Paper Association.
Mr. L. Paquet, Chairman, Executive Committee, Canadian Forestry Association.
Mr. E. Porter, Manager, Quebec Forest Industries Association.
Dean J. W. B. Sisam, President, Canadian Institute of Forestry.
Mr. Angus Hills, Chairman, Committee on Soils and Land Use, Canadian Institute of Forestry.

The following documents were tabled by Dean Sisam:—

Progress in Land Classification and Utilization.
Forestry and Regional Planning in a Land Use Policy for Alberta.

The following document was tabled by Mr. Vance:—

Brief of the Canadian Forestry Association of Ontario.

At 12.45 p.m. the Committee adjourned until Thursday next, March 21st, at 10.00 a.m.

Attest.

John A. Hinds,
Assistant Chief Clerk of Committees.

THE SENATE OF CANADA
SPECIAL COMMITTEE ON LAND USE IN CANADA

EVIDENCE

OTTAWA, Thursday, March 14, 1957.

The Special Committee on Land Use in Canada met this day at 10 a.m.

Senator McDonald in the Chair.

The DEPUTY CHAIRMAN: Members of the Land Use Committee, I wish to thank you for this honour, which is wholly undeserved, of acting as your chairman in the absence of our chairman Senator Power.

We have for discussion today, a very important subject, that of forestry conservation. I hope that we will be able, through our inquiry and study, to recommend the taking of some steps which will be helpful in making our people realize the great value to them of forestry conservation, and perhaps in some way we can help to further the cause of forestry conservation and bring home to our farmers, to our lumbermen and to our people generally a greater appreciation of the great value of our woodlands.

We are happy to have with us today Mr. J. A. Vance, Chairman of the Board of the Canadian Forestry Association. He will introduce some of our distinguished visitors here today. Among them is Mr. J. L. Van Camp, General Manager of the Canadian Forestry Association, Mr. G. Harold Fisk, President of the Canadian Forestry Association who will address us. We are very pleased to have Doctor J. W. B. Sisam of the University of Toronto at the meeting this morning; he will introduce another visitor who will later address the committee.

Mr. James A. Vance, M.E.I.C. (Chairman of Board, Canadian Forestry Association):

Mr. Chairman, and members of the Committee, may I say that it is a great privilege for us to attend this meeting today. I would like at the outset to present to you some of the officers and members of the association and those closely associated with us in our work.

I would first like to introduce Mr. G. Harold Fisk, professional engineer, president of the Canadian Forestry Association;

On my right is Mr. J. L. Van Camp, general manager of that association;

Also present is Mr. Lucien Paquet, chairman of the executive committee; Mr. E. Porter, a member of the Quebec Foresters; Mr. W. A. E. Pepler, M.F., F.E., past president of the Canadian Institute of Forestry; Mr. W. S. MacDonald, secretary of the Canadian Forestry Association of Canada; the next is my grandson who is a tree farmer.

And also with us this morning is Doctor J. W. B. Sisam, Dean of the Faculty of Forestry of the University of Toronto.

Dean J. W. B. SISAM: And, Mr. Chairman, I would like to introduce Mr. G. Angus Hills, M.S.A., Chairman of the Board, Canadian Institute of Forestry.

Mr. VANCE: Mr. Chairman, those are the members of the delegation here today. I would now like to ask Mr. Fisk if he will present to you the brief that has been prepared for presentation to the Committee.

Mr. G. H. Fisk, P.Eng., President, Canadian Forestry Association, called:

Mr. Chairman, there are certain exhibits referred to as being attached to the brief which we are filing with your committee. If it is agreeable to the committee, Mr. Chairman, I would read this brief through and at the close our delegation will do its best to answer any questions you may wish to ask concerning it.

The DEPUTY CHAIRMAN: It may be best, then, if members would allow Mr. Fisk to finish his presentation and following that we will have a question period:

Mr. FISK: This is a preliminary presentation to the Senate Special Committee on Land Use in Canada, on behalf of the Canadian Forestry Association.

The Canadian Forestry Association is a non-political, public service organization which has operated in the public interest in Canada since the year 1900. It is a non-profit association, supported equally by the general public, business and governments, to provide public information on Canada's renewable natural resources.

We are making a preliminary statement only at this time. A careful collection of the opinions, and of the publications produced by all sections of our national Association will be made later.

PURPOSE

This Association was formed to combat public apathy toward destructive forest fires. Forest fire is still causing heavy damage. Over the years this work has been continued but the Association programs are now primarily concerned with improving standards of forest management. Making full and permanent use of the related resources of soils, waters and wildlife is an important part of our basic teaching.

In our Letters Patent of 1924, the aims and objectives of The Association are set out. This clause in particular is closely related to the terms of reference of your committee:

> (*c*) To consider and recommend the exploration, as far as practicable of our public domain and its division into agricultural, timber and mineral lands, with a view of directing immigration and the pursuits of our pioneers into channels best suited to advance their interests and public welfare, with this accomplished, a portion of the unappropriated lands of the country could be permanently reserved for the growth of timber;

The following clauses refer to Association action:—

> (*d*) To collect and disseminate, for the benefit of the public, reports and information bearing on the forestry problem in general and especially with respect both to the wooded and prairie districts of Canada, and to teach the rising generation the value of the forests with a view of enlisting their efforts in its preservation.
>
> (*e*) To secure such forestry legislation from time to time from the federal and provincial governments as the general interest demand and the particular needs of the people seem to require.

FUNCTIONS

We would like to emphasize that our chief function is in providing public information on renewable resources. We are not a fact-finding or research organization, producing original data.

We have, however, in the year past, prepared and presented two briefs to important Commissions. In each of these documents our function in providing public information on Canada's renewable natural resources was set forth. The

briefs were presented to the Royal Commission on Canada's Economic Prospects, and to the Ontario Water Resources Commission, of which our Chairman, Mr. Jas. A. Vance, is a member.

Material submitted with the present statement includes abstracts from these documents. Additional material is included from the professional foresters' society of the Province of New Brunswick, with whom we are affiliated in forest land use studies.

We would like to offer the services of the Canadian Forestry Association in spreading useful information from your Committee as widely as possible. You will have many factual documents presented, on a subject as basic as land use. The services of our lecture staff in each province, our monthly publication *Forest and Outdoors*—of which we have copies here—with over 25,000 per monthly issue, and the opportunities presented for public information by our national conferences are freely offered to this Committee.

Perhaps our major concern is for clear and accurate definition of forest lands, to distinguish them from agricultural lands. This will aid successful colonization, and will maintain forest lands in production. As indicated in one of the briefs attached settlement of land for agricultural purposes in Canada has been largely on the basis of trial and error. The unfortunate settler on non-agricultural lands has paid the bulk of the price, by the loss of his capital, his years of poverty on a doomed farm, and the tragedy of his children consigned to a region without adequate opportunity for education or advancement. The country at large also faces a severe penalty, in forest devastation in these areas, from unwise land clearing, and in many cases from extensive forest fires sweeping out from these ill-advised agricultural attempts on forest lands. I would like to say here, Mr. Chairman, that about 85 per cent of forest fires are started by human carelessness, and a very large part of the 85 per cent are caused by settlers engaged in clearing their land.

The situation has slowly adjusted itself, over the generations, in the older parts of Canada. We are now witnessing a wave of tree farm purchase by city and urban dwellers, anxious to rehabilitate waste and abandoned lands where farming was once attempted with no possibility of success.

Our association, by sponsoring the Canadian tree farm program, is increasing the rate of repair of these forest lands. Most were denuded because of the lack of adequate land use planning, in advance of the so-called settlement.

The problem of distinguishing between agricultural and forest soils is still acute in several areas; the clay-belt regions of central Quebec and Ontario, and the park areas of the Prairie provinces, just north of the open wheat lands. In these millions of acres, much of it is still open to—perhaps—mistaken use, correct land use decisions are immediately required. Action at the earliest possible date could avoid miseries which have been encountered elsewhere. The hundreds of thousands of acres destroyed by forest fires last year in these territories can be partially attributed to fires escaping from land clearing operations. Some of this attempted settlement would, perhaps, not have been permitted in the first place, under good land use planning.

Other aspects of planned land use are of interest to this association. These include the need for shelter belts of trees, to prevent wind erosion in the areas of critical land use in the drier parts of the west, or on sandy soils in eastern Canada. The problem of our water resources is intimately related to the use of land. Good forest cover is essential to adequate water storage and water production.

Many other land use factors have a close relation to the forest, including use of lands for recreational purposes by millions of our citizens and large numbers of foreign visitors each year.

In all aspects of land use, the Canadian Forestry Association is deeply concerned, as public spokesman for Canada's renewable natural resources. We therefore welcome the opportunity to make this preliminary statement to your distinguished committee. We invite use of our public relations facilities to acquaint the Canadian public with the objectives and the findings of the Special Committee on Land Use for Canada.

The DEPUTY CHAIRMAN: Thank you, Mr. Fisk. If anyone has any questions to ask Mr. Fisk, the president of the Canadian Forestry Association, we would be glad to have them at this time.

Senator HORNER: I saw a rather amusing idea expressed by a lumberjack, who blamed the ladies for a lot of these bush forest fires, because they had forced men to quit chewing tobacco and made them smoke cigarettes. He claimed that cigarettes were the cause of the fires. The poor fellow was not thinking of one of the reasons why tobacco was chewed. There was no coffee break, nor time for rolling cigarettes, and, with your teebee in one hand you could not stop to roll a cigarette, anyway.

Mr. FISK: I would say there was a great deal of sense expressed on both sides there.

Senator WALL: The problem of a comprehensive look at land use, generally speaking, across the country, is inseparable from over-all planning, which must be enforced, or may I say reinforced, by legislation at all levels. Is there available for the use of this committee, that you know of, a sort of comprehensive analysis of pertinent legislation at all levels which is in usable or workable form and which does not need to be collated or collected at the present time? You understand what I am driving at? Supposing I want that information. I want to know generally speaking how that legislation fits in or dovetails at the municipal, provincial and federal levels across the country, and to what extent it is now pertinent.

Mr. FISK: Mr. Chairman, I think you will agree that the question is a rather broad one. Frankly, I am not prepared to answer it specifically at the moment. I will assure the gentleman, however, that we will look into it in an endeavour to obtain the answer for him. In the meantime, possibly some members of my group would be prepared at least to suggest something along that line. Would you care to make some statement on it, Mr. Vance?

Mr. VANCE: My experience has been confined to the province of Ontario. There are county bylaws and there are various pieces of legislation passed by the provincial legislature. I suppose this would apply in each province. I think it is an excellent suggestion and something which would require some time and thought. However, I think there could be some comprehensive correlation on it. It might be something that could be done when we look at this on a national scale.

Senator BRADETTE: Mr. Chairman, on page 1 of the brief I read: "In our letters patent of 1924, the aims and objectives of the Association are set out. This clause in particular is closely related to the terms of reference to your committee." I do not need to read all of clause (c) but it starts out: "To consider and recommend the exploration, as far as practicable of our public domain and its division into agricultural, timber and mineral lands," et cetera.

I come from northern Ontario, and I have had some experience with relation to Europeans settling in that north country. Many of them have been very successful. Has your organization any data or statistics about these people who have remained on that land?

Mr. FISK: I believe we have. I would ask Mr. Van Camp to reply to your question.

Mr. VAN CAMP: I would point out that we are not a fact-finding organization, and any statistics that we have would be something we have had handed to us.

Senator BRADETTE: I understand.

Mr. VAN CAMP: I do not believe I can personally answer your question, senator. Possibly Mr. Hills, who has made land use study, can answer it.

Mr. HILLS: May I have the question again?

Senator BRADETTE: What data or statistics has the Canadian Forestry Association got with respect to directing immigrants into channels best suited to advance their interests and public welfare? What information have you got as to the success of putting immigrants in the wooded areas like that of the northern Ontario clay belt and the northern Quebec clay belt, and so on?

Mr. HILLS: My work is somewhat of a different aspect. In connection with my research work for the Department of Mines and Forests I have made certain studies but I have no statistics with me. However, at a later point in this program I was hoping to be in a position to supply a background as to why there are successes and failures in this question of settling people. I would attempt to answer this question later, and if my answer is not satisfactory perhaps the question could be redirected to me.

The DEPUTY CHAIRMAN: We hope to have a fuller explanation; will that be satisfactory?

Senator BRADETTE: That will be satisfactory.

Mr. FISK: Mr. Chairman, I notice that a very careful record of the proceedings is being kept. We would appreciate it very much if you could forward to us later a copy of that part of the proceedings you wish us to have, particularly concerning these questions which we are unable to answer fully at the moment; we would certainly be very pleased if that could be done and would consider it an opportunity to deal with those questions and to advise you to the best of our ability.

The DEPUTY CHAIRMAN: Thank you, Mr. Fisk.

Mr. FISK: Before I resume my seat: On the first question this gentleman over here raised, one of our committee, Mr. Pepler, I think, will be able to add something to the discussion. Would you allow him to speak?

The DEPUTY CHAIRMAN: Yes, of course.

Mr. W. A. E. PEPLER: Mr. Chairman, as a partial answer to that question, the Agricultural Institute of Canada has made a compilation of legislation at all levels dealing with soil conservation. I cannot give you the exact reference now, but I will take it upon myself to see that a copy of that is forwarded to your executive.

Senator HORNER: May I ask you this question, as a forestry man? In the conservation of forest land and of forest do you recommend largely that woods should be cut clean of everything and then replanted, or that it should be harvested? Is it possible to harvest what is ready and leave the remainder growing—thin it out, so to speak?

Mr. FISK: The practice varies a great deal in different parts of Canada. For instance, the nature of lumbering and logging in British Columbia is vastly different from that of Ontario and Quebec.

Senator HORNER: Yes.

Mr. FISK: In our group we have a practical woodsman, Mr. Lucien Paquet, who is chairman of our executive committee, and he could probably add something that might be worth while.

Mr. PAQUET: Would the senator state his question again, please?

Senator HORNER: Is it possible on a large scale, in conservation of the forest, to do a thinning job today, that is, take what is ready of the large sizes, as is done in some countries, I understand, with a complete sweep of everything usable taken, and then replant the whole area? What would you recommend; what is possible in that regard? I notice in eastern Canada now in the streams, and even at the sawmills, very small timber being floated down the rivers. At first glance, it seems to me that they are cutting it down too low, and that it should be left for some years, that timber which has a fairly fast growth.

Mr. PAQUET: In answering that question, I feel that I would almost have to ask someone better qualified than I am to give a fairly elaborate course in forestry, because the answer to your question, to state it very simply, is dependent on the nature of the stand, whether you are in eastern Canada or western Canada, to determine the best method used to harvest the forest where you want to operate. In most cases, such as in the clay belt where you have an even stand the method prescribed is quite definitely clear cutting. In other instances, where you have an uneven stand select cutting by either diameter limit or by just plain common sense is indicated.

In other areas you might have a very young stand of first growth, and the removal by dethinning process of very small timber is indicated in order to give the remaining stand a chance to put on more rigid growth of better quality timber. Finally you have another element which is often misconstrued, that is, the removal of the very young coniferous trees, especially as Christmas trees. The Christmas tree harvest is not necessarily a devastation of our forests.

That is about as simply as I can answer the question.

Senator HORNER: I may say that in Saskatchewan, where I have had some experience, the Government has adopted a policy of marking the trees for cutting, and if you cut any unmarked trees you are liable to a fine; then an estimate is made of the stumpage, and you pay on that basis. In that way you take all the value that is in the tree. If you take it all you get a fair stumpage price, and if you attempt to leave top logs you would be short in your measurements.

Senator HAWKINS: First, I should like to congratulate the last witness who spoke, on the very enlightening answer he gave. There is no clear cut rule; it all depends on the location, the stand, and many other things.

I should like to direct a question in connection with the tree farming, which is mentioned in the program, and ask how closely that is being integrated with agricultural activities.

Mr. FISK: Mr. Chairman, I think the two men best fitted to answer the question on tree farming would be either Mr. Pepler or Mr. Van Camp.

Mr. PEPLER: Mr. Chairman, it is very closely integrated with the farm economy. In other words in our program of disseminating information we realize and appreciate that it is fundamental that the wood crop that a man takes from his farm is just one of the items of his total crop. Does that answer your question, Mr. Senator?

Senator HAWKINS: It does to a certain extent. The point was raised in the brief as to marginal land that is not suitable for farming, and is not capable of supporting a family in the standard of living that I think they should enjoy. However, I think a great many farmers in some areas in Canada could largely complement their income by the products of their forest land, where the forest is properly cared for. I should like to know if you have gone into that stage of the tree farming part of it?

Mr. PEPLER: Our tree farming program is comparatively young. We are only now moving into that stage, but we are quite satisfied that the wood

products from a portion of a man's farm, be it 30 or 60 acres, will provide for that farmer very considerable income and will make certain marginal farm operations profitable.

Senator HAWKINS: Have you made any study of what the potential of these thirty, sixty or hundred acres would be if properly cared for, in comparison to the clear-cut method of burning for pasture? Land return is what I am speaking of now.

Mr. PEPLER: We do have some examples of that. I think Mr. Van Camp is in a better position to answer that question than I am.

Senator HORNER: But it is true, is it not, that on many farms in fairly good agricultural districts a corner of the farm may be better suited and could be more profitably used for woodlot purposes; the rest of the farm may not be marginal, as far as agriculture is concerned, but that part of it is?

Mr. PEPLER: That is right. There are very few farms in Eastern Canada that do not have part of the farm used for wood products production.

The DEPUTY CHAIRMAN: I think Mr. Fisk will perhaps clear up the point for us.

Mr. FISK: Mr. Chairman, the tree farm movement in Canada is comparatively new. We really embarked on it officially three years ago. That movement has been in successful operation in the United States since 1941, and in that compartively short period, from 1941 until now, there have been developed, I believe, something of the order of 17 million acres in the United States under certified tree farms. In Canada we have about half a million acres so far. Mr. Van Camp, our general manager, has done a great deal of spade work in developing our tree farm movement and in the course of that work he contacted those in authority in the United States. He therefore has a good deal of background and factual data which may be of help to you.

Mr. VAN CAMP: Mr. Pepler and a great many others in the pulp and paper industry and the sawmill industry had the feeling for years that more encouragement should be given to people to develop wood lands or denuded land that should be put back in production. At the present time we have an inspection made by a professional forester of every piece of land for which application is made, and the details in that report give something of the history of the lot in question, and the amount of timber taken off that area over the past four or five years. At the present time we now have 400 case histories across Canada which give the particulars of each lot and the improvements done on tree farms. I think we can give you a summary of some of the results which have been achieved through the establishment of tree farms.

The DEPUTY CHAIRMAN: Have you any of that detailed information with you?

Mr. VAN CAMP: No, Mr. Chairman. Unfortunately, our timing was a little short for this particular hearing, but, we will be glad to document those.

Senator LEGER: In what provinces are tree farms operating now?

Mr. VAN CAMP: In the provinces of Saskatchewan, Alberta, Ontario, Quebec, New Brunswick; and Prince Edward Island has an application for an experimental farm to be located at Charlottetown.

Senator BRADETTE: Mr. Chairman, I may say a few words about the situation in Northern Ontario, where I live. We have the Kimberley and Clark Company, which has a big mill at Kapuskasing, where they utilize 1,200 cords of pulpwood a day, seven days a week. They have the finest scheme of afforestation and reforestation that I know of. They have a big tree farm at Moonbeam and at Iroquois Falls they are making wonderful experiments and doing great work in reforestation. I was told, in visiting some of these tree farms, that the best scheme they have for expanding the forest limit northward

is drainage. There have been, I understand, some demonstrations before the Ontario government authorities—I think this applies also on the Quebec side—and that these two governments are being asked to give them funds for the drainage of so-called muskeg land; and where the people who are operating are people of experience, as around Smooth Rock Falls, they have shown an increased growth of 400 per cent, because around there there was nothing but stunted black spruce. The moment drainage is done, the growth is stupendous. An expert from the Ontario government told me personally that he thought that they could expand northwards away past the James Bay limit.

I believe that your fine Association has done some work on these lines too. I firmly believe that on the lower land worthwhile work could be accomplished in increasing the great potentialities of our forests in Canada, and that statement applies to every section of northern Canada.

Mr. FISK: Reference has been made to a point which I think possibly you would like to have brought again to your attention. The speaker mentioned the names of two large pulp and paper companies. If the tree farmer is to be encouraged to develop his farm, he has to have some assurance in some way of a market for his product when it is time to crop it. Mr. Pepler, among other things, is director of the Woodlands Section of the Canadian Pulp and Paper Association. In that capacity he deals with a thousand or more woodlands members of the Association who are employed by all of the pulp and paper companies in Canada. He deals with the companies and the company heads; he knows their thinking and their policies; and it is my impression that the companies which are doing afforestation are taking steps too, in some practical way, to assure a market for the small tree farmer. I think that is a most important point, Mr. Chairman. Perhaps you would like Mr. Pepler to say a few words on that matter.

Mr. PEPLER: One of the elements of success of tree farming is to be able to sell your products. Of course, economics must enter that picture, too. In other words, if you have a plant for making hairpins, and people do not use hairpins any more, you cannot sell hairpins to anybody. The same is true as regards the products of your farm woodland. You must have some sort of industry close to it where these products can be sold.

One thing about the pulp and paper industry which has come into evidence in our development of the tree farm program is that they are able to use what formerly were considered weak species. We have, not all over but in certain locations, a pulp and paper mill able to take, for example, the tops out of the trees, and take hardwoods of certain species, if the transportation is not too great, which previously had no use, because they did not have the proper forms to make lumber out of the material. That of itself is increasing the amount of usage that we have out of each acre, because formerly that material was not used.

Another use that is being developed very considerably now is the chipping of material which was formerly wasted from sawmills, the chipping of slabs and edgings into chips for manufacturing pulp and paper—which again is conserving our forest land, because we are using more of the material that is grown on the land that was formerly thrown away or left to rot.

Senator HORNER: You will be acquainted with what is going on at Hawkesbury—their tree farm and their encouragement to tree farmers?

Mr. PEPLER: Yes. It is one of the cases I had in mind. There are others, but that is an excellent one.

Senator HORNER: And it is working well?

Mr. PEPLER: It is working very well indeed.

Senator McGRAND: The first speaker mentioned that a great many of the fires causing destruction of forest land started from settlers clearing land. I would first like to know in what parts of Canada, and to what extent, that destruction is going on. My second question is, in New Brunswick we have large areas of lowland slow-growth black spruce. I was wondering what method of drainage could be put to use down there that would improve the growth of lumber on these black spruce areas, because it is the general impression that they are just there to stay, that they have been there a hundred years and that they are going to stay there probably for another hundred years.

Mr. FISK: Mr. Chairman, if I may deal with the second question first, because it is closely related to the very important question which the honourable senator from Northern Ontario raised, of soil drainage: it brings us into the technical and perhaps the academic side of forestry. In view of that, perhaps Dean Sisam, Dean of the Faculty of Forestry in Ontario, would like to say a few words in respect to soil drainage. I will deal with the second question next.

Dean I. W. B. SISAM: Mr. Chairman, ladies and gentlemen, the question with regard to Northern Ontario brings to mind an experiment I have seen near Lowbush, which is some distance from Iroquois Falls, where a drainage experiment was started some years ago. There is no question about the effect of that drainage upon the growth of the spruce. I have seen some samples where the diameter growth of the trees was about 2½ inches in 56 years, and half an inch growth in four years after drainage. However, there are some problems. One, of course, is that the effect of the drainage is only for a relatively small distance from the water channel, probably not more than 25 feet from the trees that were cut down; and that, of course, indicates a very expensive procedure relating to and affecting the economics of the crop when it is harvested.

In Finland they had a good deal of drainage on their lands with respect to forest growth, and I understand they consider it an economic undertaking. The economy of the country is very much related to the forest industry, and the relatively small area involved and the relatively high population are factors relating to the need to invest more money in the land available.

In this country we have extensive areas of land and it would seem to me that we should concentrate on developing the most productive lands to begin with, areas where we do not have to invest too much money.

The same problem exists in New Brunswick and Nova Scotia where there are extensive areas of poorly-drained land producing slow-growing black spruce. I believe that if these lands were drained it would result in an increase in the growth of the black spruce, but a good deal of it would also be developed into good agricultural land. It is a question of draining the land as well as developing the technical procedure necessary in order to divert it to agricultural land or to fast-growing spruce lands.

Senator HORNER: Would you say better soil exists where black spruce grows than where red or other spruce grows?

Dean SISMAN: I could not answer that question precisely but certainly in the clay belt area and in the Maritime provinces there are sections where black spruce is growing and which would be good agricultural land if it were drained.

Senator BRADETTE: It is black muck over solid clay. We have a problem in northern Ontario which might be classified as a political one. I know that we are not dealing with political questions here but I would point out that the farmers and settlers living near one of our big pulp and paper mills have no difficulty in marketing their pulpwood until certain export regulations are put into effect. Then they are up against it. They cannot do anything else with this product, which is a finished product to them, and if it is sold as

firewood they do not get full value for it. I would like to know whether your organization has made any study of this problem, which is vital to our section in northern Ontario. We must have a market for this product.

Mr. FISK: I think I can call upon one of our members to answer your question, Senator Bradette, but in the meanwhile may I be given permission to have the question answered about the forest fires?

The DEPUTY CHAIRMAN: Yes.

Mr. FISK: I would ask Mr. Van Camp to answer it.

Mr. VAN CAMP: Some fires occurred last year in northern Alberta, and some several hundred thousand acres of timber were burned out. There were also some fires in the northern Saskatchewan territory.

Mr. FISK: There is some further data on forest fires in this brief, which would be helpful. I would like to call on Mr. Lucien Paquet to answer the question raised by the senator from northern Ontario. Mr. Paquet is the senior officer of one of our large pulp and paper companies which operates largely in northern Ontario. Then I would like to call on Mr. Pepler because he is in constant touch with the other pulp and paper companies in northern Ontario. He could probably contribute some statement of assistance.

Mr. PAQUET: Mr. Chairman, I had the pleasure of meeting Senator Bradette in his office here a few years ago. I might say that it is not easy to answer his question.

Senator BRADETTE: I know it is not.

Mr. PAQUET: It is because we have to enter into provincial problems. There are certain problems existing around Cochrane and Hearst, and I think Hearst is the place that Senator Bradette has in mind. I believe in 1947 the provincial Government put into effect a regulation to control the flow of Ontario Crown land wood outside of the province.

Since at that time Ontario was not exporting any wood to speak of to Quebec, and none to Manitoba, there was only one place it was being sent, and that was to the United States. While pulpwood, whether in the rough form or in the peeled form, is the finished product as far as the settler or the farmer is concerned, from the provincial standpoint it is still raw material that is not worked. Rightly or wrongly, the provincial authorities at that time felt the raw material could be used for the benefit of the whole province if it were processed in Ontario rather than exported out of the country. I think I am right in stating that to a certain extent some relief was given—

Senator BRADETTE: It had to be.

Mr. PAQUET: —in order to alleviate the situation a little, particularly around Hearst. On the other hand, it is my feeling that in that general area, as well as in the rest of the province, there are sufficiently large numbers of mills interested in that kind of processing and that quality of pulpwood to be able to pick out the relatively small volume that was being exported. Whether this is still a problem I cannot say.

Senator BRADETTE: It is not an acute one.

Mr. PAQUET: No, it is not an acute one at the present time. I might elaborate on my answer by saying that the province of Quebec is doing exactly the same thing to a certain extent, trying to keep within the province the pulpwood which is considered as raw material. They want it to be processed inside the province for the greater benefit and the general welfare of the Quebec people.

Senator HORNER: Exactly.

Mr. PAQUET: For fear that my statement may be misinterpreted I would like to add that I am not suggesting that this has to be done. I am just explaining what is actually happening. Does that answer your question, Senator Bradette?

Senator BRADETTE: That is fine.

Mr. FISK: Mr. Chairman, may I call on Mr. Pepler to add a few words to what Mr. Paquet has said, because as Mr. Paquet intimated, when that ruling was brought down in 1947 it was really based on a broad concept, a national concept. Instead of Canada shipping out raw wood there were three more steps, from wood to pulp, pulp to paper, and paper to the finished product—in the form of a shipping container or a paper bag, or what have you; and its purpose was to keep Canadians from being hewers of wood and drawers of water and make them more self-contained. As I say, this was a broad concept, and I know it has been discussed very thoroughly by many pulp and paper companies. Undoubtedly Mr. Pepler has some idea of their thinking, and if he would touch on that point I think it might be helpful to you.

Mr. PEPLER: Mr. Chairman, and gentlemen. Mr. Paquet has, I think, covered the situation to do specifically with certain areas, but actually the same principle operates in other provinces as well. In other words, they do consider the pulpwood as a raw material, but if it is possible that it has a potential for further manufacture in Canada the best of it is used. On the other hand, from time to time there is not enough demand for the wood, but there is a demand for export, and it means quite a lot to those settlers in those areas. I think the proper answer to the problem is to consider each on its merits at the time, but that every effort should be made to further the manufacture as far as it is possible in Canada, simply because that brings the best profits to Canada.

Senator HORNER: That is true of the western provinces. We were exporting some pulpwood, and now a pulpwood mill is being built there. A huge one has gone up in Alberta as well. The idea is to manufacture with the wood rather than to export it in the raw state. I would think that in northern Ontario they would be willing to buy all the forest pulpwoods the farmers wish to cut.

Senator BRADETTE: It all depends on distance; they have their limits, too.

Senator HORNER: Well, it is better than shipping it to the United States.

Senator BRADETTE: But sometimes the market is better for the settler. Some of them are 250 miles from the nearest mill.

Senator HAWKINS: Mr. Chairman, this might develop into purely an economic discussion.

The DEPUTY CHAIRMAN: I wonder if there is any more to be said here as to the co-operation that is being given to the departments of Lands and Forests in the various provinces? What encouragement are you giving the departments, and through the departments to the farmers to farm their woodlots, that is, to take out each year what should be taken out and to leave what should be left to grow?

Mr. FISK: I think that is closer related to the tree farm movement.

The DEPUTY CHAIRMAN: Yes, possibly.

Mr. FISK: I am going to call on Mr. Van Camp to answer that question, but may I say that we had a national conference on forestry in Winnipeg last September, at which approximately two hundred people attended from all parts of Canada who were interested in all angles of forestry. To touch upon your specific point, sir, we had the deputy ministers from, I think, seven of the provinces there. Of course, we had the Honourable Mr. Lesage, Minister of

Northern Affairs and National Resources, and deputies here. There was a very close coordination of effort between federal and provincial authorities and our association. Perhaps Mr. Van Camp can amplify that a little.

Mr. VAN CAMP: I think this commitee is quite aware of the Canada Forestry Act of 1949. So far several of its sections have implemented the national inventory of timber resources and efforts toward reforestation, and just very recently the assistance in capital investment for fire protection. So far there has not been very much money flow from the federal Government to the provinces for assistance or for public education. We have already presented a brief suggesting that it might be valuable if more assistance in those fields could be given—assistance to private owners, and as to the education involved.

The DEPUTY CHAIRMAN: Senator Crerar?

Senator CRERAR: What is the composition of the Canadian Forestry Association? I think the committee would be interested to know that.

Mr. FISK: I shall be glad to answer that to the best of my ability. I am very pleased that you ask that question, Senator, because of your long standing association with the industry. The association is made up of approximately 30,000 members, most of them being individual members, although there are many corporation members. We have a full time salaried staff located in four cities. Our head office is in Montreal, where we have a staff of about seven or eight; we have similar staffs in Toronto, Winnipeg, and Vancouver. These staffs are on full time salary. The honorary side of our organization is made up of about 110 people. Our patron is, and always has been, His Excellency the Governor General of Canada. The Prime Minister is the national president of the association. Our executive committee has 22 members, consisting of a president or chairman, executive vice-president, and five other vice-presidents, and members of the executive committee. It is that committee of 22 that largely decides basic policy. That is on a national basis. In addition to that, and working concurrently with it, we have provincial committees, each committee consisting of five people, a chairman and four members. Finally, we have a group of national directors, numbering about 44, I think, at the present time. They consist not only of executive heads of companies, like Powell River Company, National Paper, Abitibi, Price Brothers, Bathurst, and so on, but also the heads of large national organizations like General Motors, Ford, Massey-Harris, International Business Machines, and firms of that type which are interested in this national movement of the conservation of one of Canada's basic natural resources. So altogether there are about 120 men who are actively interested in the progress of our association. Of course, we hold an annual meeting once a year; in fact, it is being held tomorrow here in Ottawa. We have meetings of our executive committee about ten or eleven times a year, as required. In the past year those meetings have been held mostly in Montreal, although one was held in Wodstock, Ontario, one in Winnipeg, and one in Quebec, and one in Fredericton, New Brunswick. We try to spread those meetings in order to get a local atmosphere, interest and support.

Mr. Chairman, I think that is all I can add off the cuff at the moment, but Mr. Van Camp, our general manager, who, of course, is the mainspring of our actual work can perhaps add a few more points.

Senator CRERAR: First of all, what is your total budget of expenditure?

Mr. FISK: About $280,000 a year, and that comes from three main sources. About 40 per cent—to be more exact, about 38 per cent—comes from the public. About 42 per cent comes from large companies, not only forest industries but other companies as well.

Senator CRERAR: Do all provincial Governments contribute?

Mr. VAN CAMP: No, I think Prince Edward Island does not contribute.

Senator CRERAR: That is understandable.

Mr. FISK: May I add one more point, Mr. Chairman? The contribution from wood-using industries like the pulp and paper companies in most instances have a fixed formula basis for making contributions. For instance, in eastern Canada a number of companies contribute about three quarters per cent per cord cut; in British Columbia the formula is on a payroll basis. This is to ensure that each company participates in a fair and proper way, depending on their size and their part in the operation.

Senator CRERAR: I take it your association does not conduct research work?

Mr. FISK: No, none whatever. We have support and a great deal of valuable assistance from a number of research organizations, including The National Research Council in Ottawa, and very important assistance from the Pulp and Paper Research Institute of Canada.

Senator CRERAR: When your association was formed it was to direct attention, to use your own words, to the combating of public apathy towards destructive forest fires. Over the years that has changed somewhat, and I judge that you are now primarily concerned with improving the standard of forest management. Would there not be a certain amount of research work in forest management?

Mr. FISK: There undoubtedly is, and it has been carried on. For instance, the Pulp and Paper Research Institute of Canada is operating on a fundamental research budget of $1 million a year, plus additional special funds for projects. Our budget does not provide or allow for that at all; indeed, it is impossible for us to handle it. We co-ordinate our efforts with the others, and do the best we can. That is about all we can do.

Senator CRERAR: Would it be a fair statement to make, that your principal function now is educational?

Mr. FISK: Exactly, it is public education. We like to feel that we have been the spokesmen for Canada's natural resources, particularly forestry, since 1900. We can speak in an unbiased, impartial way. If we make a statement it is accepted by the public, we believe, as being correct and proper; but if a pulp and paper company makes the same statement, it may be judged to be made through selfish motives; or, if a government makes a statement—I leave it to you gentlemen to decide what might be regarded as the motive.

Senator CRERAR: It would probably arouse political controversy.

Mr. FISK: That is so.

Senator CRERAR: Your magazine *Forest and Outdoors* is a very excellent magazine, if I may so so.

Mr. FISK: Thank you.

Senator CRERAR: I recommend that all members of this committee be subscribers to it. That is one agency through which you disseminate information.

Mr. FISK: Yes.

Senator CRERAR: Have the public become aware, generally speaking, of the importance of minimizing forest fires?

Mr. FISK: I would say a great deal of improvement has been made, but I will admit that there is a lot more to be done.

Senator CRERAR: I noticed your statement—and this is in keeping with my memory of the situation when I had something to do with it some years ago—that about 85 per cent of forest fires are man made, that is to say, they have their origin in the carelessness of the individual. Would that be correct?

Mr. FISK: Yes sir. I can give you briefly some actual figures as to the details of fires published by the federal Government, for the year 1955. Smokers of all types, whether riding in a motor car and tossing out a cigarette butt, or elsewhere, accounted for about 18 per cent, for a total of 1,195 fires. Camp fires accounted for 14.5 per cent; railways, 8.8 per cent—I may say that is diminishing by reason of the use of diesels.

Senator CRERAR: Diesels will ultimately prevent forest fires being caused by trains.

Mr. FISK: Settlers account for about 9.7 per cent; miscellaneous, known, 6 per cent; industrial operations, 4.5 per cent.

Senator CRERAR: How do you define industrial operations?

Mr. FISK: I am not too clear on that, but I would think woods operations.

Mr. VAN CAMP: Hydro lines, clearing lines and public works.

Mr. FISK: Incendiary accounts for 2.4 per cent. When you stop to consider that in 1955 there were 6,516 fires, 2.4 is quite an appreciable percentage. Public works contributed 1.2 per cent, and lightning 29.9 per cent.

Senator BRADETTE: Is that really correct?

Mr. FISK: These are the figures put out by the federal Government.

Senator BRADETTE: I have asked that question of Indians and other people in my country, and no one has ever seen a fire started by lightning.

Mr. FISK: The total in 1955 was 1,947 fires traceable to lightning. Fires from unknown causes amounted to 4.7 per cent.

Senator HORNER: Lightning is a frequent cause of bush fires in northern Saskatchewan.

Senator CRERAR: In your brief giving the origin of fires you show lightning as 8 per cent.

Mr. FISK: That refers to the province of Alberta only. These other figures I have given come from the printed report by the federal Government.

Senator CRERAR: It is very important to have those on our record.

Mr. FISK: Mr Van Camp has some further points he would like to contribute.

Mr. VAN CAMP: With your permission, Mr. Chairman, I may say one very large and important element of the forestry association work has not been mentioned. I refer to the French-Speaking Quebec Forestry Association, which has a separate charter to handle the work being done with the French-speaking people. Mr. Edgar Porter, one of the directors of the association, is here, and I would ask him to say a few words.

Mr. Edgar Porter:

Mr. Chairman and gentlemen, I am very glad of the opportunity to tell you something of the work being done in Quebec. The language aspect makes it rather difficult for C.F.R.A. to reach all places. The Quebec Forestry Association was formed back in 1938, and it very soon had solid connections with C.F.R.A., and has been very active. It has organized regional sections all over Quebec, and does a good deal of effective work through the 4-H club movement. There are I think some 900 forestry clubs in the province, and the boys and girls who form the membership of those clubs take a very keen interest in preventing forest fires, in planning thinning and other forest operations.

I do not think I can add more, Mr. Chairman, except to say that perhaps the manager of the association might wish to submit a supplementary statement.

The DEPUTY CHAIRMAN: May I ask what is the emblem you are wearing?

Mr. PORTER: That is the Quebec Forestry Engineers Association.

Before I take my seat may I say that I think the setting up of a committee on land use is an excellent idea. Canada is becoming of age. Up to date we have used our lands and forests as the Lord gave them to us, but now we have to put some effort and thought into the proper use of them. I believe we can obtain from our forests a much greater return than we have in the past.

The DEPUTY CHAIRMAN: Mr. Fisk, if you have a representative here who wishes to speak in the French language on behalf of the French organization, we would be pleased to hear him.

Mr. FISK: Thank you Mr. Chairman, but before calling on our French member, may I refer to one other matter? I believe there are two other briefs from related forestry groups which have been prepared and which will be filed with you today. I would like Mr. Vance to refer to those now, if he will, because the time is getting short.

Senator CRERAR: The experience of other countries down through history clearly demonstrates the misfortunes that follow destruction of forest covering. We have some of that in Canada. Has any study been made, for instance, of areas where trees were cut down generations ago for the purpose of farming land that should not have been growing anything but trees?

Mr. FISK: Senator Crerar has brought up a very important point, and I cannot think of anyone in a better position to answer it than our Chairman Mr. Vance, who is also a senior member of the Ontario Water Resources Commission. That commission has held hearings in many parts of Ontario, and I believe that particular point has been brought up on numerous occasions.

The DEPUTY CHAIRMAN: Mr. Vance, would you care to enlarge on that?

Mr. VANCE: Mr. Chairman, my knowledge in that connection covers only parts of Ontario. I may give you the example of Norfolk County, an area which is now largely given over to cultivation of tobacco. I believe that had a great deal to do with stimulating the establishment of these forestry sites, to recover land in southern Ontario which was becoming drifting land, drifting from wind erosion and such like. I know that that situation exists in some other parts of Canada, but I am not familiar with the details. However, it is becoming increasingly important that these areas must be covered or else great economic losses will continue to be suffered. There are parts of Ontario especially near Lake Erie where that has taken place, but over the last forty or fifty years some improvement has been made. That whole problem is related to the question of water conservation; if we are going to make use of the rainfall, the water that we have, then steps must be taken to hold it, and one of the essential steps is to cover the area with trees to prevent wind erosion. It is important that tree covering be placed and that the land must not be stripped clean and used for any other purpose.

Senator CRERAR: Something has been done in that respect in the area of the headwaters of the Grand River, I understand?

Mr. VANCE: Yes, dams have been constructed there. But that area is not so subject to erosion because the soil is a little heavier. Throughout the province many trees are being planted for the reason that such cover prevents land erosion. Dams also help to hold back uncontrolled flood waters. Unless the watershed is covered, these dams would silt up too much, and so tree cover on the watershed is essential to prevent it.

Senator CRERAR: Is there not another development in the neighbourhood of the Ganaraska?

Mr. VANCE: The same condition existed there. I am not too familiar with the details except that to say that the Ganaraska watershed was one of the first that gave great concern in Ontario, and steps were taken to plant trees there because erosion by wind was becoming extremely serious. I have passed through there without having examined conditions very closely, but the planting of trees has been of the utmost importance, and I believe they have restored and saved a great deal of land for agriculture in that area by planting trees, holding back the water, better farm practices and all that sort of thing. All that has very much improved the land in the Ganaraska watershed.

Senator HAWKINS: I would gather this, Mr. Vance, from your assessment of the situation, that the prevention of fast run off, wind erosion and water erosion, is more economically carried out by the provision of forest cover than by the building of dams?

Mr. VANCE: Yes, up to a point. I am not sure, though, that you could eliminate the building of dams entirely. In southwestern Ontario, for instance, the flood peaks have increased to a point where floods are of very serious concern to our cities, for instance, London.

Senator HAWKINS: But largely because of the lack of land cover on the watershed; that is a point I wanted to make.

Mr. VANCE: That is right. We do believe that with the increase of forest cover on watersheds these flood peaks will be reduced—we do not think there is any question about that. The other point is that where dams are built and where we need water for the minimum season, there should be some sort of storage, but to build storage dams without taking steps to prevent or reduce silting will not do anything to solve that problem.

Senator BRADETTE: You mentioned the tobacco growing area in Ontario. Was not the soil in that section very poor in the first place and yet it turned out to be fertile and very productive?

Mr. VANCE: That is true. But if all the trees are stripped off the growing of tobacco does not prevent wind erosion. The fact that there has been shelter belts planted, the planting of enough trees to prevent wind erosion has been a very important factor there.

Senator MOLSON: Mr. Chairman, I would like to ask two questions: First, what is the rate of depletion of the forests in Canada, and secondly, to what extent is reforestation being practiced at the present time?

Mr. FISK: Mr. Chairman, I believe we can give Senator Molson a partial reply at this moment and supply you with more detailed figures later on. I believe Mr. Pepler is in a better position to answer that question than anybody. He can express to you the programming and the thinking of the leading pulp cutters in this part of Canada.

Mr. PEPLER: In answer to the first part of Senator Molson's question, the depletion of our forests is outlined in the table Mr. Fisk referred to previously concerning fires. I do not have the figure in mind at the moment, but I believe it is of the order of ten to fourteen cubic feet per acre per year. I am not sure that that figure conveys very much. But I can possibly answer the question by stating that in general it is our opinion that we are removing less than is growing. That is possibly the kind of answer you wanted?

Senator MOLSON: Yes.

Mr. PEPLER: That is a general statement covering the country. Different parts of the country are in various stages of being over-cut and under-cut, and generally speaking the areas that are closest to settlements, closest to the mills, are areas that are being or have been over-cut up to now, while the more remote areas in the north are areas that are being under-cut. On the other hand

in the latest settled areas—and perhaps Senator Hawkins can confirm this—in Nova Scotia, for instance, it is fairly well in balance now. We are cutting on the same land for the third and fourth time, and it is a sustained yield proposition.

The second part of your question is, what are we doing in the way of reforestation, that is the planting of trees. Although there are many examples, they are all from small-numerically-volume areas. Through the greater part of eastern Canada we are still endeavouring to bring back natural regeneration to the greatest extent, for the simple reason that it is the chapest. The honourable senator from Northern Ontario mentioned the policy of the company at Kapuskasing. There they have made a very careful study of what comes back after the cuts, and they have—I am not sure of the figures—I think two-thirds of their area coming back naturally and they will have another crop; the other third does not come back, and they have a forest nursery and a planting program to fill the blanks. It is really filling the blanks.

The areas where we need the greatest amount of reforestation are the areas where we really do not do much, the areas that Mr. Vance is familiar with, in the southern part of the country, where ill-advised colonization has taken place, where the tree cover has been stripped to such an extent that there are no seed sources for natural regeneration. In those areas it is essential that we go about hand-planting of trees to restart the cover on the area which is naturally and more or less permanently good only for forest growth.

Senator LEONARD: Mr. Chairman, in the Association's excellent brief they deal with this problem of distinguishing between agricultural and forest soils, and refer to settlement that took place that should not have taken place. I would like to know whether my understanding is correct that the Association would favour legislation which would in effect zone the use of land so as to earmark certain land for forest purposes only and prevent the use of this land for agricultural purposes.

Mr. FISK: That is a pretty broad question. I frankly admit I am not prepared to answer it. But I will admit it seems to make common sense, at least. I will be glad to discuss it with my executive committee and express an opinion later, if you wish.

Senator LEONARD: Do you know of any such legislation now, either provincial or outside Canada?

Mr. FISK: Our Chairman, Mr. Vance, has a thought there, I believe.

Mr. VANCE: I am not sure whether there is any what you might call compulsory legislation, but today we have many land-use surveys going on, and we have much information, advice and guidance. For example, if I were going to select a farm in western Ontario it would be easy for me to go to the Department of Agriculture or various agencies and get an assessment of that land, and I would be advised, if I were going to farm, I should not go on this type of land, and so on. As far as I know it is in that category. I am not quite sure how wise compulsory legislation would be, because after all it is all privately-owned, in southern Ontario anyway. I would say they could control it by legislation on the Crown lands. So far as I know, land assessments and plans showing the types of soil and that kind of thing, have been—many of these plans have been prepared in recent years, and are available.

Senator LEONARD: You think that control of the use of the land could be effected without legislation?

Mr. PEPLER: I don't know how you are going to legislate for the man who owns his own land, be it what it is. But I think public education will help, and people's ideas change. I do know this, that in recent land purchases people come out and get advice and these maps, records, surveys, and all

they can find out, before they go to a particular area to look for a farm. That is being done more and more, and I believe it is a move in the right direction.

Senator HORNER: There are, of course, many provincial forest reserves where, to avoid the danger of fire, no settler is allowed to homestead. We have such areas in the province of Saskatchewan.

Mr. PEPLER: That is on Crown lands?

Senator HORNER: Yes, that, of course is on provincial Crown land.

Senator CRERAR: Mr. Pepler, I want to ask you a question about reforestation. You stated that there are areas where the seed has disappeared, perhaps through fire. At any rate, there was no means of reseeding the area, and you suggested planting as a remedy. Would it be possible to carry on some reforestation work by the spread of good seed by hand or by airplane?

Mr. PEPLER: Yes, certain experiments have been made with seed scattered by hand. It has been mostly experimental up to now. There are many difficulties in Canada, but they are still developing seed treatment. But briefly, they take the seed and they pelletize it with some irritant or something which will keep mice away from it and, second, with a certain amount of fertilizer. They have done some of that in British Columbia and also in Newfoundland, but, as I have said, it is still in the experimental stage. Probably Dean Sisam could answer that with a little more elaboration.

Senator BRADETTE: If I may be allowed a question in the same connection: is it not true that in Kapuskasing they leave some male trees and female trees in the holdings over which they cut?

Mr. PEPLER: It is correct that they leave seed trees. That is where you have what I call a seed source. I think the senator here is referring to where there is no present seed source. It is more sure to reproduce by planting, because you have overcome what you might call the early growth potential losses.

Senator CRERAR: If destruction by fire is prevented, would not nature restore a balance? Why I mention this is because, as I remarked once before in committee—these gentlemen are probably not familar with it—there is an area in Manitoba between Carberry and Brandon, known as the Carberry Hills. These are mainly sandy soil; there may be three or four inches of top soil and a sandy or gravelly base, and there are spruce trees. I can recall 50 years ago travelling through that area and, because of the destruction by the fires which swept over it, there was scarcely a conifer tree in sight,—perhaps one here and there. Today they are growing by the tens of thousands, not through artificial reforestation but by natural reforestation. If that area is protected from fire, then in another hundred years there will be an excellent spruce forest, covering hundreds and hundreds of square miles.

Mr. PEPLER: That is correct, sir. If you keep fire out from the greater part of Canada you can obtain natural regeneration.

Senator CRERAR: Nature does a pretty good job.

Mr. PEPLER: Yes.

Senator HAWKINS: I would like to ask Mr. Vance a question in connection with land control. As the financial institutions which lend money for the development of land become more conscious of the possibility that they will not be repaid for the money they are lending, they may stop lending for this purpose. As a matter of fact, are they not being more cautious now as to what type of land they will lend money on? Do you see any evidence of that?

Mr. VANCE: Senator Leonard is interested in our part of the country and he knows more about that sort of thing than I do.

Senator HAWKINS: I would sooner have an answer from you.

Mr. VANCE: I would say very definitely yes. As we all know the question of the economics of these marginal farms and agriculture in general is a very difficult one to solve today. It would be my judgment that lending institutions take a very much closer look at the success of any farm they loan money on today than they ever have during my lifetime.

Senator HAWKINS: That answers my question.

Senator BRADETTE: I have always kept in my personal library all the literature of the late D. Barjum, who was a great lover of the forests. Could Mr. Fisk tell us what happened to his holdings on Vancouver Island that he developed with his own money and funds subscribed by various citizens? That holding was a fine thing for Canada and, as a matter of fact, for the whole North American continent.

Mr. FISK: I am sorry but I have no information on that.

Senator HOWDEN: What is the prospect with regard to the sand hills? There is an area between Carberry and Brandon, Manitoba, of fifty by a hundred miles, with nothing but little round sand hills. I spent some time in the area and I have never known people to have grown anything successfully there.

Mr. FISK: I am on the spot with respect to that question, but perhaps Mr. Pepler could answer it.

Mr. PEPLER: I feel quite sure those sand hills could support forest growth.

Senator CRERAR: Hear, hear.

Senator HOWDEN: They are just little brown bare sand hills with few trees.

Mr. PEPLER: I am satisfied, however, they could support tree growth. Mr. Vance could probably give you cases where sand, by the gradual introduction of one species after another, has formed into soil and has been able to support forest tree growth.

Mr. FISK: Perhaps Dean Sisam could elaborate on that when he makes his general statement.

The DEPUTY CHAIRMAN: Yes. Dean Sisam, would you care to make your general statement now and perhaps you could answer some of the questions that have gone unanswered so far.

Dean J. W. B. Sisam, B.Sc.F., M.F., Faculty of Forestry, University of Toronto:

Mr. Chairman, with regard to the last question I might just refer to the afforestation program which has been developed in Norfolk County, Ontario, where a good deal of land prepared for agriculture in the nineties developed into sand dunes. As a result of the work of E. J. Zavitz of the Department of Lands and Forests, and the establishment of a nursery at St. Williams, a very fine forest development has taken place on these lands that were becoming sand dunes forty or more years ago. I might say that pine is probably the best species of tree to grow on sand, and I think red and white pine and some scotch pine were the species used to develop tree growth on these sand dunes in Norfolk County.

By way of introduction, I would point out that I am representing here this morning the Canadian Institute of Forestry. I would like to emphasize that this organization is not a competitive organization and is an entirely co-operative one. I represent the national group of professional foresters in Canada, known as the Canadian Institute of Forestry.

The DEPUTY CHAIRMAN: What position do you hold in that organization?

DEAN SISAM: I am the president. To indicate the close co-operation between this group that you have just been hearing and the Canadian Institute of Forestry, I might say that Mr. Pepler is the immediate past-president of the Canadian Institute of Forestry. There are other gentlemen here who are members of my organization, and I am also a director of the Canadian Forestry Association. So the two have close inter-relationship and the same broad objectives, although perhaps they tackle them in a different way. Our membership is made up entirely of professional forestry people, graduates of the four forestry schools in this country. We have a total membership of some 1,700, drawn from every province and representing many different aspects of professional work with the wood-using and associated industries, and with research institutions and universities and with the government services across the nation.

For purposes of local administration the Institute is organized into nineteen sections, three in the Maritime provinces, two in Quebec, seven in Ontario, one each in Manitoba, Saskatchewan and Alberta, and four in British Columbia. These local sections deal very actively with reference to local conditions. We have a head office in Ottawa with two permanent employees. Our secretary, Mr. Coats, is with us today, together with his assistant.

We have as our main objective the development of technical forestry in this country. This is where we come very close to the work of the C.F.A.—the Canadian Forestry Association. We are endeavouring to help bring about a better understanding on the part of the Canadian people as to what professional forestry involves and its objectives and what it is doing. We publish a technical journal known as the *Forestry Chronicle,* which is published four times a year. These are our four main objectives.

Technically our interests are served by a number of standing committees, one of which under the chairmanship of Mr. Angus Hills, who is here today, is directly concerned with problems of forest land classification and land use. That is the general picture of our organization.

In coming before you this morning, I should like to express to you the appreciation of the Institute for your kind invitation, Mr. Chairman, to make this representation. Secondly, I would like to emphasize to the members of your committee the very real interest of the Institute, both nationally and locally, in this most important problem you have been called upon to study—the means of ensuring that the land resources of Canada are put to their most effective use.

The interest of the Institute in this matter has been expressed in the past in reports to our own membership and in briefs or memoranda prepared for submission to governments or their representatives. Among the more recent of these at the national level is a survey entitled: "Progress in Land Classification and Utilization," prepared by one of our members for presentation at a recent annual meeting, and I would like to submit that to the committee, for in part that answers one of the questions raised a few minutes ago. This does not list the legislation that has been passed in regard to land utilization. I do not know if there is a great deal in Canada at the present time, but it does indicate the work done in regard to soil and land classification and its use with respect to agriculture and forestry in the different provinces.

The DEPUTY CHAIRMAN: Shall we include this in the record?

Hon. SENATORS: Agreed. (*Document tabled*)

DEAN SISAM: That was prepared by one of our members for presentation at our recent annual meeting. It is a report at the national level. As an example of the sectional level, a brief was prepared by the Alberta section of the Institute for submission to the government of that province entitled, "Forest and Regional Planning in a Land Use Policy for Alberta." I would be pleased

to submit this also as evidence, if I may, of the interest of the Institute at the sectional level in this particular question of land utilization. (*Document tabled*)

Reference to the forestry aspects of land use has also been made in briefs of a more general nature presented by sections of the Institute to provincial authorities in British Columbia and New Brunswick and by the national organization in a brief to the Royal Commission on Canada's Economic Prospects. Furthermore, since receiving your invitation to appear before the committee, I have written to each of our sections across Canada, and while time did not permit my hearing from all of them, I have had ten replies. In each case the local importance to the foresters of this question of land use was emphasized, and in a number of cases specific suggestions or recommendations were made; that is, with regard to local problems. However, I do not propose to go into the details of these at the present time, I simply bring them to the attention of the committee as evidence of the broad and active interest of the Institute in the problem before you and of the willingness of the Institute to assist in any way it can.

The DEPUTY CHAIRMAN: Could you give us briefly what was said by the ten who replied?

Dean SISAM: Well, it would take some time to go through them because they are quite lengthy reports. I would propose to incorporate their recommendations, and the recommendations and additional suggestions I have had from other sections, in a brief to be submitted to the committee at a later date. I might add, however, that they come from Nova Scotia, New Brunswick, three of the Ontario sections, Manitoba, Saskatchewan and Alberta, and one of the British Columbia sections so far, and I expect to have other replies.

The DEPUTY CHAIRMAN: It would be perfectly satisfactory if the committee would like to have them later.

Dean SISAM: Actually, I had two long distance calls with regard to the possibility of preparing briefs on behalf of sections, but I felt it would not be doing justice to the question, and that it would be better to submit a brief to the committee at a later date. As I say in my notes here: while it has not been possible to prepare a comprehensive brief for presentation at this time, it can be undertaken in the future if the committee so wishes, but I would like to discuss briefly the reasons for this interest on the part of foresters in land use, some of which have become increasingly significant in recent years:

1. As I think all will agree, forestry represents one of the most important uses of land in Canada, both in terms of area and in the contribution it makes to the national economy.

2. Foresters, probably more than any other group, are aware of the extent to which forest land was cleared or burned over in the past, as the problem of its rehabilitation has been largely a forestry one, whether the forests are becoming established naturally, as is true in some parts of the country, or by man's assistance through reforestation. That applies whether the forest is established naturally, as it is in Nova Scotia and New Brunswick to quite an extent, or has to be re-established by planning.

I might mention here that the re-establishment of forests on abandoned farm land is probably easier in the maritime provinces because of the high atmospheric humidity and other factors. In fact, it is often difficult to clear those areas of trees. On the other hand, in Ontario, and perhaps particularly

northern Ontario, it is difficult to establish trees, certainly naturally, because very often we have a drought over a period of two weeks after germination and all the small seedlings are killed. We have different conditions in different areas, therefore, and we cannot generalize and say such and such is the best way of doing things throughout the country, but it has to be qualified with reference to local conditions.

In this connection, it should be pointed out that by no means all land submarginal for agriculture is suitable for timber production, and furthermore that for many tree species there is a great difference in the quality and quantity production of timber, depending on the quality of the land bearing it. I feel that that is a point that is not appreciated, because many people say that such and such a land is not suited to agriculture and that the forests should take it over; that is sometimes true, but unless there is conservation of water and soil it is not good economy to grow trees where they are difficult to grow.

Land classification is as important within the limits of a timber producing pattern as it is in differentiating land for its major uses.

Also, I should like to mention here that the fact that agricultural settlement has left in its wake large areas of non-productive lands does not indicate arbitrarily that a combined farm forestry economy is undesirable, or that the two approaches to land use must of necessity be developed separately. It may merely indicate that there has been no positive support for the development of a forest settlement economy. Undoubtedly, there are many families that have been sustained and are being sustained on the combined returns of farm and forest.

3. Our interest in land use is prompted by the certainty of a long term increase in the demand for forest products, accompanied, however, by an increasingly competitive market in the United States and elsewhere. The need for high yields at low cost suggests the importance of classifying soils so as to make the best use of the more accessible and productive areas. With the depletion of natural stands, lumber and pulp companies are seeking raw material closer to their mills. That is an economic question. Accessibility and high productivity will make possible more intensive management of forest land for continuous yield. Of course, that is the nucleus of what one might visualize as the development of forest communities on a permanent basis as one approaches land management for continuous forest crops.

4. Finally, with a growing population and an increasing pressure on land for housing developments, industrialization, transportation, recreation, etcetera, as well as for crop production, both agricultural and forestry, and because of the long term nature of the forestry enterprise and the interrelationships of forestry with other aspects of land use, such as recreation, it becomes increasingly important that land be classified with reference to all natural factors affecting its potential productivity, including soil, climate, topography, as well as the social and economic factors that will influence its successful development. This approach seems to be of vital importance to the best overall development of our land resource.

I am not an expert in the details of these matters, but if the committee agrees, I should like to have Mr. Hills, chairman of the institute's committee on soils, develop this question of land classification a little further for the information of the committee.

Senator HORNER: You have no member of your association in the Yukon or Northwest Territories, have you?

Dean SISAM: There is a representative in the Yukon; I think his name is Wilson, and he is a graduate of the University of Toronto.

Mr. ANGUS HILLS: Mr. Chairman and honourable senators, the time is short in which to begin a discussion on the complexity of land classifications.

In case I cover the ground so rapidly and leave so much unsaid, I wish briefly first to outline my background and interest in this problem in order that you at least know you have my sympathy.

I feel quite at home in a discussion on land use, because I was brought up on a subsistance farm in southern Ontario, on land which is called poor. In my teens my brother and I homesteaded in northern Ontario, where the Government said there was good land. There I found myself still doing subsistance farming on good land in that area.

Senator BRADETTE: What section were you in?

Mr. HILLS: Rainy River.

I thought the difficulty was because of my ignorance and lack of understanding of the problems. So, I took a course in soils at the Ontario Agricultural College and became a soils expert, and have since written a number of soil survey reports. But that did not give me the full answer. It could be climate, and it could be the men operating the farm.

I should like to point out that those who failed to establish full-time farming in northern Ontario have done so not because of their lack of knowledge of how farming should be carried on. There are many stories to be told about that situation, but I shall not take the time to tell them. I know many men who have gone from a full-time farming operation in Kent county to the Rainy River district, and a few established full-time farming there. I was well acquainted with them in 1922-24. Their sons had bought farms and were beginning to clear land, with full-time farm operations, including the raising of sheep, hogs, with crop rotation and so on. When in 1942 I went back to make a soil survey I found that the sons were cutting pulp on the areas that had not been cleared. That was the best land in the Rainy River district. The climate there was still able to produce crops, but the men were faced with some other problem.

I decided the difficulty must be in the realm of geography, so I took a course in that subject at the University of Toronto. I knew something about agriculture, but I did not know much about forestry use. Thanks to my friends in forestry, I have been given a very thorough education in the use of land for forests. I enjoy the enviable position of chairman of Soils and Silts in C.I.F.

Honourable senators, I did not intend to get into all this background, but rather to go directly to the complex problem of the classification of land for various uses.

The potential of land depends largely on the topography of the country, that is, the soil materials which give it that topographical relief. It depends also on climate. The problem has so often been simplified by saying that soil and climate is all we need. But there is a very specific combination of soil and climate required; there is also a specific unit which we know as land types. We look at these land types as being specific combinations of soil materials and relief with an added combination of climate. If we move from north to south we may have the same land, the same relief and materials, but there is a variation due to the regional climate, which differs in its effect from one region to another.

So, we have to consider patterns of land types in a regional climate. It is very important to recognize that is what is good for one region of a country is not equally good in another region. The farmer who goes from southern Ontario to the Cochrane clay belt remarks on the rich black muck, but he is thinking of the black muck in southern Ontario. I feel that the soil in the north has potentialities for both agriculture and forestry, but there are certain facts which should be faced.

The natural land types in the regional picture is the fundamental basis on which to begin the study of land use. The soil scientist, as you know, has

no magic ball into which he can gaze to give him the answer as to what a certain soil will produce, unless he has seen a crop growing on it. A crop, whether natural or cultivated vegetation, is the indicator of the potential use of the land. We have to look at the crop and take note of what grows best on certain land type under different management conditions.

In farm management there is a natural condition. Nature also is a manager, and we have to read into the natural substance how nature managed its forest. So we look at the vegetation as the key to the interpretation of land potential. Therefore, it is necessary to have an inventory of past and present land uses, and of the various crops that have been grown under various types of management.

After all the data has been organized, then you can arrange an inventory of past and present land use in relation to land types, and so rate the land types for different uses. We use a seven-point classification, A to G, A being the best and G being the poorest. We include all land in this classification; for instance, bare rock and very deep bog are in G classification, very remote from agriculture. This is a relative rating within a region, which is necessary in order to get a reference point in our thinking. You can have as many ratings in a particular area of land use as there are possible crops to grow, and possible combinations of management in the growing of those crops.

When you see an agricultural crop under a certain type of management, to say that it also will produce a good forest crop under certain management does not give us the final answer as to the use of that area. The cost of developing a crop for agricultural land use may be so uneconomic as to make it impractical to use that land for agricultural purposes. That seems to be the answer in many parts of our clay belts in the north—it is technologically possible to carry on agriculture but economically immature.

Now, to weigh land uses, I hate to introduce this weighing in the balance because it will appear that forestry and agriculture are in opposition, but I am using it because we have to have some way of analysing the problem because in order to decide whether we are going to use the land for agriculture or for forestry we have to have some idea of the rural economy in the area in which those lands are situated. For example, whether an area can be devoted to the production of wheat on the prairie will depend on whether you are just going to grow wheat and not operate a grain and livestock economy. The economy, the way of life of the farmer is very important. In eastern Canada I think it is equally important to know, particularly on the lands of lower agriculture potential in southern Ontario and, we will say, the St. Lawrence area and the Maritimes, whether an area of land is going to be operated under a part-time agriculture and forestry economy or a full-time agriculture or full-time forestry economy. Then, if the economy of the area has either been established by local usage or might be determined, not by government legislation as we heard earlier, that would not be the thing to do—but I believe that there are ways in which government might help a great deal.

By the way, in mentioning all the reasons why people failed in the north, I forgot to mention about the government. The human factor was mentioned, the soil and the climate were mentioned, but I do believe that governments can do something. I was very much impressed by a statement made by Helga Nelson, a Swedish geographer who after making a summer's tour of Canada went back home and said in the official organ of his geographical society that the natural resources of Canada, in the northern sections of the provinces that—and he was referring to the northern clay-belts of Quebec, Ontario, the northern sections of the western provinces, as well as the Peace River country—the natural resources of all these areas were far

greater than any natural resource in Sweden or Norway had yet developed; but that the way that the economy was established, and our system of land tenure, and our method of giving assistance to the farmers, all this was such that he would recommend that Scandinavians stay in their own country. Of course, there may be a bit of propaganda in that but on the other hand I think it sets out very clearly this problem that your committee is thinking about at the present time, of how you can get the regional group, the provincial group and the dominion group to work together so that people who are on the land obtain as good a living as possible. And that is my fifth point—integration of planning at regional, provincial and federal levels.

I might say, just as an example, that a group of civil servants in the employ of the Ontario Government interested themselves in the clay-belt; they have gotten together in a sort of an informal way, with the blessing of the department heads, and are looking at some of the clay-belt problems in such a way that the agriculturist and the forester will not be talking in entirely different language but will have a common understanding of the language and what type of land they are talking about. It is very easy to say that the clay-belt lands are good or the clay-belt lands are poor, but there is a great variation in those clay-belt lands. I have had the pleasure of working with a group in the clay belt, and while I do not intend to mention any of their findings, their report will be published in the near future. I wish to emphasize this idea of getting people together in a regional area to study regional problems. They can do two things: they can analyse the problem and they can recommend steps which they think the government should take. Then, when a decision has been made,—and they may possibly make alternative decisions or recommend alternative solutions,—either to, let us say, subsidize full-time farming only or subsidize part-time farming and include some implementation of forestry, the establishment of forestry economy. And so the regional planning group, before they can complete their plan, must await the type of controls that it is possible to exercise.

I think it is important that the governments be made acquainted with full knowledge of the problem. I say this kindly to those who, like myself have lived in the north. The pioneer spirit is a spirit that we all should covet and keep; the pioneer spirit is one that never admits defeat. I find it difficult to talk about the north and say there has been failure because of this or that; but there has been delayed success, let us say, because of certain factors. I do feel that we must face the realities of the condition, and that these regional groups must be able to face these realities in order to present the picture in as true a light as possible.

Now, Mr. Chairman, that is all I have to say in a broad way about the principles of land use; I was prepared to apply these principles by way of example to a portion of the clay belt.

The DEPUTY CHAIRMAN: I wonder, Mr. Hills, if you could briefly summarize what you have had to say.

Mr. HILLS: Possibly it would be more words! I will make a start on these maps. I think they really show the situation.

This is map No. 1, with three overlays. Here is a pattern of the land types of the Cochrane clay belt,—the willow green, the deeper green—almost a blue-green—and the green are three areas of clay and silt soil. These soils are largely stone-free on a level terrain, and are ploughable. On the good range there is no question of drainage or removal of the peat, but on the moist or moderate drainage in the wet areas there is an accumulation of peat. I wish I could go into this matter of peat formation, because it has a very, very strong influence on land-use in Canada. But, very, very briefly

it is this. We have a clay soil, and if it is poorly drained we have an accumulation of peat, and the movement of the water through that peat causes a very, very heavy clay layer underlying the peat, which we call the glye. Something has been said about the drainage of that peat; and I am not at all happy about the ease with which that peat can be drained. I made a statement at a muskeg meeting in Quebec City recently that the drainage of peat was extremely difficult; and an expert from Scotland who is interested in a commercial way in peat—he has developed peat machinery and so on—said, "I agree with you; you can't drain peat, it is impossible to drain peat, but what you do is to get a tree on the peat and it acts as a pump to pump the water out of the soil." I said, "That may be all right in Scotland—I doubt it—but in Canada we have not got a specie of trees that makes it an efficient pump." Why? Because from the soil standpoint I can give evidence that areas in the north which once produced mixed stands of white spruce, balsam, fir, and birch—possibly also white pine—are now covered with black spruce swamps. How can I tell that? Because on these upper slopes we have a type of soil of good structure which develops under good drainage, and superimposed on these areas of good-structured soil is this glye, this hard pan clay which is associated with black spruce and may have black spruce swamp growing there.

So that the picture is this. You may take that area and say that it is growing good black spruce and the forests may be able to regenerate to black spruce without difficulty; in time our good black spruce sites are becoming poor black spruce sites, and eventually—although it may take several hundred years—they will become unmerchantable muskegs.

The DEPUTY CHAIRMAN: The roots of the tree will not go down through that hard clay?

Mr. HILLS: No. In fact the Cochrane clay belt is a miniature lake. The water that falls never reaches the subsoil at all. The water is staying up on top of that hard pan layer underneath the peat, and the subsoil is quite dry.

So we have here clay land, and you might say, very briefly, that in time all these clay lands could be developed for agriculture. We cannot say they are non-agriculture because, in time, with pressure on populations and so on, they could be used for agriculture.

We might just take a look to see how these areas rate for agriculture use. I am sorry that you cannot realize how large a group would be here, but there are portions of this area in which the agricultural rating is in the lower half of the scale, but here we have areas B, A and C, A being the best, the second best being dominant, and C being the third. This is a rating for the Cochrane belt only, not for the whole of Ontario. It is a rating for a climatic region in which the vegetation tells us that within that area the influence of climate has the same pattern, not the same effectivity in every place. There are certain topographical conditions where they have a greater effect, and under other topographical conditions the effect of the regional climate will be less.

That is a regional rating for that Cochrane area, and, just to get some idea, although the farming is different and the crops are different, I believe I am right in saying that the potential of the very best A lands in the clay belt is equal to the C lands in southern Ontario, because of the difference in climatic control, climatic hazard, and the influence of a cool climate and a very moist climate on soil development and crop productivity. So that the A lands in the clay belt are about equal to the third class in southern Ontario.

What does that mean? Are the B lands used in the Niagara peninsula? Yes. So the B lands also should be developed in the clay belt.

We do not use class E lands in southern Ontario, except for growing tobacco, which is a very special case. As this Norfolk County area is being

used for tobacco, the other farmers have been moving out. As a matter of fact, they nearly all got out before the tobacco people came in. Since class E lands are not commonly developed for general agriculture in the Niagara region, it would seem that it is not yet time to develop class C lands in this clay belt.

This section of clay belt is about twenty miles by fourteen.

Senator BRADETTE: Would that be the Kapuskasing section?

Mr. HILLS: I did not intend to tell you exactly where it was. It is a generalized picture of the Annapolis area. What is the present land use picture in that area? These red checkered areas are being farmed full-time. I might say that I took this off aerial photographs showing farm clearings, so I know it is correct in that respect. Aerial photographs are wonderful things in order to give you an actual picture of what is happening. Surrounding these areas is this larger path of what are called part-time farms with scrub and second growth forest. As settlement has advanced, the forest has been cut down and is not being replaced by forest species.

Possibly we could take a look at the forest use capabilities, and you will see that in forest use it is very similar to the agricultural picture in that the clay and silt is best suited for forestry. I might say, however, that for the present at least, the poorly drained clay areas of the north are being used to better advantage in the production of forest crops than of agricultural crops. A permanent forest economy can be established on sandy materials, the shallow materials over bedrock and the wet clays and silts, especially where you are using a good fibre black spruce.

The Canadian Forestry Association has suggested the program of land classification. I would argue that a line between forestry and agriculture cannot be placed until we know the economy which is going to be established.

We have certain recommendations we can make. We can make a reasonable suggestion that the areas which are held in full-time agriculture be extended over areas which have a large proportion of class A and class B lands which are presently served by a highway. I am referring now to our agricultural use-capability map No. 2. Now, the rest of this is to be devoted to forestry, but here is the stickler. There is no forest land there; nothing but scrub. Are we going to establish forests there at great costs, particularly if in the immediate future more of this land will be required for agriculture? We can extend that with still greater pressure to include this area (indicating on chart). When the development of agriculture hits these low-potential lands in these two corners, there is going to be a very definite boundary line set there for some time. But in the meantime should that be the boundary line?

I would point out that out of a 1¼ million acres of land which have been opened to settlement in the clay belt, there are only a few thousand acres being farmed on a full-time basis. Are we going to have the foresters take this over and re-establish the forests without any thought of agricultural settlement? Are we going to refuse to accept a part-time farm and forestry economy? I have found I have few friends in either camp. The agriculturists claim that a man who works in the bush does not look after his stock. The forester says that a forester is a forester and therefore he would be better off looking after his forest interests than trying to perform some farming duties. I think we should analyze the present rural population of Canada to get a better picture. According to the 1951 census, there were 172,000 occupied farms throughout this country whose operators derived some revenue from non-farm sources. This represents 28 per cent of the total 623,000 occupied farms. There is nothing fundamentally wrong with a part-time economy. It is true that a farmer who works part-time at farming does not have the fine buildings that a full-time farmer has. In this respect I can think of an

area not far from here. I made a survey of the Carleton County area around Ottawa and I was told, "Now, don't be too hard on the farmers down in Marlborough Township. They are on flat bedrock." But I was told that many of these same farmers held mortgages on farms around the North Gower area. So instead of the farmers in Marlborough Township building fine farm buildings they were investing in mortgages on farms in a better area.

Now, that does not mean that there is no problem of land use in Canada, but it means that the analysis of land use must be made by people who are on the farm in the region from a husbandry standpoint, and from the standpoint of ecology, meaning the relationship of plants and animals to their environment, and from the standpoint of the geographical relationship, by which I mean the relationship of man to his environment.

Senator HORNER: And to his markets?

Mr. HILLS: Markets, economics, social, and all. I do feel that we need social and economic studies. But I would like to express this thought, that the social and economic studies be tied to land types. I do not wish to criticize any work that has been done, but I think there was work done in the clay belt by the Dominion Department of Economics which analyzed the success and failure of settlers. They had all kinds of information about the amount of money they had when they came in, and the children which came and stayed on the farm, and about markets, and so on, but they had to tie in with the type of land; and success and failure is, first of all, tied to the potential of the land.

Thank you, Mr. Chairman.

The DEPUTY CHAIRMAN: I am sure we are very much indebted to Dean Sisam and Mr. Hills for the splendid statements they have made. Mr. Fisk, I believe, is going to make one or two short statements, but first of all if there are any questions to be asked of Dean Sisam and Mr. Hills, please ask them now.

Senator LEGER: I should like to ask a question of some one, but I am not sure of whom. How many private farmers are interested in tree farming in Canada?

Mr. VAN CAMP: If I may answer that: The number actually signed up on certified farms was 385 at December 31, 1956; and there are 418,000 acres of tree farms.

Senator LEGER: Where are they located?

Mr. VAN CAMP: In almost every province, including that debatable belt across the north part of the provinces, and those settled in the marginal areas, plus many in the marshland areas.

Senator LEGER: Are they meeting with success?

Mr. VAN CAMP: Depending on the location of the lands.

Senator LEGER: Thank you.

The DEPUTY CHAIRMAN: I should like to ask Mr. Hills if it would not be more practical generally, when it comes to a question of increasing output of agricultural products, to use the better quality lands, that is, A and B in this case, for agriculture, and perhaps leave the rest of the land for forestry?

Mr. HILLS: Yes, that is the general idea, except in the clay belt where we do not need all our A and B lands. Out of the large area of A and B lands that have been opened for settlement only a portion has been cleared, and the cleared area is a very small portion that is farmed. You can go from township to township and buy A and B lands of 70 acres cleared for very little.

Senator BRADETTE: For a sum?

Mr. HILLS: I was going to say, for a sum; and that is in Ontario, because it has the need of A and B lands up there. But certainly if there is going to be any policy of continued settlement there it should only be on the A and B lands within organized communities.

Senator BRADETTE: Of course, the young people go to the newsprint and sulphite plants.

The DEPUTY CHAIRMAN: Because they can earn more in other industries?

Senator BRADETTE: Because they can earn more in other industry, and they prefer the easier life, and so on.

The DEPUTY CHAIRMAN: Are there any further questions, ladies and gentlemen? If not, I will call upon Mr. Fisk to make a short statement.

Mr. FISK: Mr. Chairman, and ladies and gentlemen, I shall be very brief because I know time is limited. First of all, I should like to take this opportunity of adding a personal word of thanks to Mr. Hills. I have learned much from him this morning, and I know it is going to stand me in good stead in the years to come.

Mr. Chairman, the Ontario division of our association, known as the Canadian Forestry Association of Ontario, in an effort to be helpful in respect to the broad area, have prepared a very short two page brief, which on behalf of the association I should like to file with the committee now. It is attached to your bound copies of our brief, and the rest are copies.

(Document tabled)

As I mentioned before, we shall be holding our annual meeting tomorrow at the Chateau Laurier. The members of this committee will be heartily welcomed if they care to come and talk things over with us and exchange ideas or ask questions, and we shall try to be helpful.

Finally, may I say that a very substantial and important part of the work carried out by our association is done by French Canadians; we have many such men on our board, and I notice that many of your committee are their fellow Canadians. In view of that fact, I will ask Lucien Paquet to say a few words in French to them, to convey greetings from French Canada.

Mr. PAQUET: Mr. Chairman, Madame, Gentlemen: On behalf of our group which represents the Canadian Forestry Association, I am pleased to thank you for having invited our Association to submit a brief on the land use in Canada.

I must admit that it was not always easy to answer the proper and intelligent questions which you have asked us.

I regret that the time at my disposal does not allow me to give you further information on matters which have been discussed in English. However, at the Chateau Laurier, we have retained Suites 176 and 178 where we would be happy to welcome you and answer any question you wish to ask.

The DEPUTY CHAIRMAN: Thank you, Mr. Paquet.

I know I voice the sentiment of every member of the committee when I express our thanks to all the witnesses who appeared here this morning. We appreciate the time and effort you have spent in preparing and giving your statements. I trust you will not feel we are imposing on you if we find it necessary to call on you at some future date, because after a very important event which will take place this summer, we hope this committee will be re-appointed, and we may want to hear from you again.

Mr. VANCE: Mr. Chairman, may I on behalf of the Canadian Forestry Association, the Canadian Forestry Association of Ontario—on behalf of which

a brief was prepared by Mr. MacDonnell (*Document tabled*)—and the Canadian Institute of Forestry express our appreciation for this opportunity of appearing before you, and for the time you have devoted to our cause today. If at any time any of these organizations can be helpful to your committee by way of submitting information, we will be only too glad to do so; after all, that is our function.

Whereupon the committee adjourned.

1957

THE SENATE OF CANADA

PROCEEDINGS
OF THE
SPECIAL COMMITTEE ON

LAND USE IN CANADA

No. 6

THURSDAY, MARCH 21, 1957

The Honourable C. G. Power, Chairman

WITNESSES

Mr. H. H. Hannam, President, Canadian Federation of Agriculture.
Dr. E. C. Hope, Economist, Canadian Federation of Agriculture.
Mr. David Kirk, Secretary-Treasurer, Canadian Federation of Agriculture.
Mr. J. A. Garner, Chief Agricultural Officer, Ontario Dept. of Agriculture.
Professor N. R. Richards, Dept. of Soils, Ontario Agricultural College.
Dr. H. L. Patterson, Director, Farm Economics Branch, Ontario Dept. of Agriculture.

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

87627—1

SPECIAL COMMITTEE ON LAND USE IN CANADA

The Honourable C. G. Power, *Chairman*

The Honourable Senators

Barbour
Basha
Boucher
Bois
Bradette
Cameron
Crerar
Golding
Hawkins
Horner
Inman
Leger
Leonard
McDonald
McGrand
Molson
Petten
Smith (*Kamloops*)
Stambaugh
Taylor (*Norfolk*)
Taylor (*Westmorland*)
Trembley
Turgeon
Vaillancourt
Wall

26 Members—Quorum: 7

ORDER OF REFERENCE

Extract from the Minutes of the Proceedings of the Senate

WEDNESDAY, January 30, 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, Golding, Hawkins, Horner, Inman, Leger, Leonard, McDonald, McGrand, Molson, Petten, Power, Smith (*Kamloops*), Stambaugh, Taylor (*Norfolf*), Taylor (*Westmorland*), Tremblay, Turgeon, Vaillancourt and Wall;

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.

87627—1½

MINUTES OF PROCEEDINGS

THURSDAY, March 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 McDonald, *Deputy Chairman,* Barbour, Basha, Boucher, Bradette, Crerar, Golding, Hawkins, Horner, Inman, Leger, McGrand, Molson, Stambaugh, Taylor (*Norfolk*), Tremblay, Vaillancourt and Wall—19.

In attendance: The official reporters of the Senate.

The following were heard:—

Mr. H. H. Hannam, President, Canadian Federation of Agriculture.
Dr. E. C. Hope, Economist, Canadian Federation of Agriculture.
Mr. David Kirk, Secretary-Treasurer, Canadian Federation of Agriculture.
At 11.40 a.m. the Committee adjourned.
At 4.00 p.m. the Committee resumed.

Present: The Honourable Senators McDonald, *Deputy Chairman*; Barbour, Basha, Boucher, Bois, Bradette, Golding, Hawkins, Horner, Inman, Leger McGrand, Tremblay, Turgeon, Vaillancourt and Wall—16.

The following were heard:—

Mr. J. A. Garner, Chief Agricultural Officer, Ontario Department of Agriculture.
Professor N. R. Richards, Professor and Head of Department of Soils, Ontario Agricultural College.
Dr. H. L. Patterson, Director, Farm Economics Branch, Ontario Department of Agriculture.

The following documents were tabled by Professor Richards:

Map of Ontario showing Major Land Use Hazards.
Your Land Use Guide.

The following documents were tabled by Dr. Patterson:

Map showing Changes in Acreage of Occupied Farm Land 1941 to 1951.
Farm Business Analysis (Short Form).

At 5.30 p.m. the Committee adjourned until Thursday next, March 28th, 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, March 21, 1957.

EVIDENCE

The Special Committee on land use in Canada met this day at 10 a.m.

Senator J. A. MCDONALD, Deputy Chairman, in the Chair.

The CHAIRMAN: I am sorry to say that we are probably going to work a little harder than usual, in that we have two delegations scheduled for today. The first one consists of the president and representatives of the Canadian Federation of Agriculture; the second one comprises representatives of the Ontario Department of Agriculture. We will take up first the representations made by the Canadian Federation of Agriculture. As honourable members know, this is a very important delegation, as also is the second delegation. If it meets with your approval I will ask Mr. Hannam to present his brief, and after he is through, possibly we could be ready with our questions. We have also, near the table here, Mr. Kirk and Dr. Hope, of the Canadian Federation of Agriculture.

Mr. H. H. HANNAM: The Canadian Federation of Agriculture welcomes this undertaking of a Committee of the Senate of Canada to enquire into the subject of land use in Canada. The subject is of obvious and fundamental importance to the long-run future of Canadian agriculture. It believes that a great service can be done by this Committee in bringing together the expert opinion, information, and points of view on the subject, and, from a national perspective, suggesting ways and means of meeting the problems which we face.

We welcome particularly the specific mention in your terms of reference of the need to improve the income position of the farmer. As is well known, the economic position of farmers in Canada is far from satisfactory at the present time, and we believe that this fact has been in part at least responsible for the initiation of this present enquiry. It is not that Canadian farmers have found themselves unable to produce abundantly to meet the needs of its customers for food—quite the contrary, much of our problem at the present time may be found in an excess of production in relation to market demand.

We do not therefore view this enquiry as simply an attempt to find ways and means of expanding agricultural production. Good land use will of course increase our long run production potential, and we believe this to be a worthy and necessary long run objective. But from a shorter term perspective we must attempt (a) to take direct measures to relieve the position of the very low income farmers who for a variety of reasons have little hope, unassisted, of escaping from their present depressed economic position, and (b) to help that diminishing number of farmers who remain in agriculture to use their land to the best possible advantage, thereby increasing their income-earning potential.

It will not be within the scope of this presentation to discuss the many problems of markets and marketing that are so vital to the solution of the farm problem, although they necessarily have a bearing on the problem of land use—which is as much an economic question as a technical one.

In all our thinking on these problems we are first of all concerned with a fundamental principle which appears in an official policy statement of the Canadian Federation of Agriculture, as follows:

> To maintain a social and economic pattern for Canadian agriculture in which the family farm will be the most representative and significant type of farming enterprise.

We will also base our analysis and recommendations on the following further principles:

1. That all land has value and has a use, and land use policy should try and direct land into its best use—best, that is, in the economic as well as the technical sense.

2. Arriving at the best land use policies may entail contraction of the acreages used for farming in some areas.

3. Those farmers who remain should have the best possible opportunity to earn a decent standard of living, and land use policy should contribute to realizing this objective.

4. All our land resources should be protected from further erosion and depletion of fertility, and where possible improved.

We realize, too, that this presentation is being made in the early stages of your enquiry. In presenting our thinking on this problem therefore, we do not pretend to be providing final answers, or to be in possession of any exhaustive knowledge of this very large subject. We do, believe, however, that our remarks fairly outline some of the main problems that Canadian agriculture faces in the field of land use, and that they are worthy of the study by the Committee. We hope too that our recommendations, stated as they are in broad terms, will assist your Committee in arriving at constructive and comprehensive proposals for meeting those problems.

THE PROBLEM

1. *Marginal and Sub-Marginal Farms:*

There is no doubt that in every province there are numbers of farmers whose incomes are below a reasonable minimum, and for whom improvement in the prices they receive for their products would not serve adequately to correct the situation. In areas where such farms are numerous there naturally tend to be inferior social services and utilities, and reduced opportunities to the young people to obtain adequate education. The causes of the situation are numerous and complex. They include: poor soil; topography and soils not easily adapted to modern farming methods; inadequate size of the farm unit; lack of capital; lack of initiative or management ability on the part of the farm operator.

These various factors may sometimes be found together. Often the initial settlement on poor soils has effectively blocked the accumulation of the capital needed for progress. Yet poor soils are not always a feature of submarginal or marginal farm areas.

In some cases, undoubtedly, farms will be found on land which because of its type and fertility, or topography, or both is simply not suited to successful farming under any conditions. Such lands are definitely submarginal for farming and should not be used for this purpose. Again many marginal farms could be established as economic units by consolidation of farms into larger individual holdings; improvement of drainage; enlargement of fields and land clearance; removal of trees and boulders from fence lines and so on. In many cases large scale machinery is needed to do the job. In all there is need for additional capital.

A further need in this connection may often be for farm management guidance to farmers as to the crop and livestock enterprises best suited to their soil, available markets, transportation facilities, and so on. This need of course is shared by many farms and farm areas which could not be classified as marginal or sub-marginal. That is a subject which is being given a good deal of thought in recent years.

2. *Erosion and Depletion of Fertility:*

The problems of soil and water erosion in their various forms, and the depletion of the fertility of soils, are of course of vital importance. These problems occur in all parts of Canada, although they vary in their particular nature and in their severity. Depletion of our soil resources should be detected and steps taken to correct the situation wherever it occurs. The problem which has received most public recognition in the past has been soil drifting in the semi-arid areas of western Canada. While the recent years of good rainfall have greatly eased this problem, and tillage practices have greatly improved, it could recur in the future. In many areas of Canada water erosion presents difficulties, the seriousness of which it is often not easy to assess, or recognize, and a clear picture of the extent of the damage which is being done should be obtained. The same observation is true of problems of depletion of fertility, the effects of which may be obscured by improved farming methods.

A further erosion problem is encountered in some parts of Canada in the form of the washing away of land by streams which are diverted from their beds—for example by fallen trees and log jams. Flooding due to uncontrolled river flow is also a cause of serious erosion problems.

3. *Water Resources and Water Control:*

The problems of water resources and water control cannot be separated from the question of land use, and conservation of water certainly equals in importance the conservation of our land resources. In this field there are many problems, both large and small in scale.

In many areas inadequate drainage is a problem which deserves a great deal of attention. There is no doubt that in some areas drainage ditches are today in poorer condition, and less effective, than they were thirty years ago. This lack of proper drainage in some cases arises out of the difficulty experienced by farmers in meeting the cost of the heavy equipment needed to do the job. In others the problem is the lack of a special service designed to give advice and assistance to replace the present cumbersome and difficult procedures necessary to get action on a community or neighbourhood drainage problem. In connection with drainage two things need to be carefully taken into consideration in addition to the immediate need to remove water from the land.

First, it is important that where required drainage problems be tackled on a planned basis that takes into account the overall development of a drainage area, whether this be a large or a small one.

Second, it is often possible that drainage improvements by themselves may have their detrimental effects on the water supply on farms, as well as their advantages during periods of excess water. Both needs should be taken into account and where needed provision for drainage should be supplemented with control dams, tree planting and woodlot conservation to ensure that excessive run-off and drainage is not followed by lack of water later in the season.

Near the top of the list, also, should go the protection and rehabilitation of watersheds. Destruction of watersheds causes flooding at some times, and correspondingly, a later shortage of water. It lowers water tables, creates erosion and silting problems, and in every way is injurious not only to the farmer but to the city dweller.

A further problem is the increasing demands being made on both our underground and surface water resources in most parts of Canada. These demands arise from both agricultural and urban and industrial sources. No program for effective land use can be successful unless it gives the greatest attention to protecting and most effectively utilizing our limited supplies of water.

SOLUTIONS:

It should be noted that in this section we are making recommendations and suggesting solutions without regard to the respective responsibilities of the Federal government, provincial governments or municipalities. The problem of participation and cooperation by these various levels of government we thought might best be considered separately.

1. *Soil, Use, and Other Economic and Social Surveys:*

Basic to the successful carrying out of programs of improvement of land use, and of rehabilitation and re-establishment, are accurate and complete factual information about the soils and their economic potential; water resources, utilization and present and future requirements, the income position of farmers, and their access to education and social services, and transportation and utilities.

(a) We would recommend first of all that the very excellent program of soil surveys—a cooperative undertaking of the Federal Department of Agriculture, Provincial Departments of Agriculture and Provincial Agricultural colleges should be speeded up and expanded, so that complete mapping of all the presently settled area of Canada is completed as soon as possible. Then non-settled areas that are potential areas of future settlement should be surveyed so that this information will be on hand when needed, and we know with accuracy the extent and nature of our potential agricultural resources.

This is a program for which there is already adequate provision in the way of Federal-Provincial cooperation and extensive work already accomplished. We would suggest, therefore, that this Committee might, in reporting on its deliberations of this session, make an immediate recommendation that this fundamental soil survey work be expanded with all possible speed.

(b) Land use surveys, based upon appropriate factors for economic classification, should be undertaken by combined teams of men well qualified in soils, forestry and farm economics, so that we may have at the earliest possible date accurate descriptions of all our farm lands as regards their suitability for agriculture.

(c) Adequate surveys should be made of our water resources; of drainage and erosion problems, of the condition of water tables and of present and likely future requirements.

(d) A further field in which adequate information is needed which should be collected through careful surveys and research is that of our farm woodlot resources. Woodlots are extremely valuable as sources of income, and for water, soil and wildlife conservation reasons. We need to know accurately the nature and extent of our woodlot resources, and the adequacy of their management and utilization in actual practice at the present time.

(e) The fullest and most accurate picture possible should be obtained, through economic (and perhaps sociological) surveys, of the position of farmers in various parts of the country, as an aid in the classification of land as marginal and sub-marginal.

The information so obtained should be concerned with incomes, scale and nature of farming operations, capitalization, services available such as roads, electricity, schools, and other information relevant to an understanding of the farmer's position.

2. *Rehabilitation and Re-establishment:*

The rehabilitation of marginal and re-organization of sub-marginal areas will necessarily require a reduction of the numbers of persons farming in those areas, and re-establishment of some families. It will also involve special programs to assist those farmers who remain to develop a program adequate to the needs of the family.

(a) In the case of lands which are definitely submarginal, there should be a program under which farmers on these lands may be given an opportunity of selling their farms to some public authority, and given, too, assistance in relocating in some other farm area or establishing themselves in some other occupation.

(b) In areas which are marginal special programs should be instituted for their rehabilitation. Such programs would almost certainly involve some farmers giving up farming in the areas, and assistance in reestablishment should be available to them. Those farmers left should then be encouraged to enlarge their farm units to the size necessary for economic operation, and given special assistance to undertake necessary drainage, clearing, enlarging of fields, construction of buildings, purchase of machinery, reforestation of wood lots, and so on. This clearly involves a number of special services, including farm management service; and engineering and other technical assistance, and probably special assistance for the use of necessary heavy equipment for drainage and clearing.

3. *Special Credit Agency:*

Such special rehabilitation programs would necessitate establishing entirely new and special credit facilities that would not only enable the farmer to buy any necessary land, but also essential buildings, machinery, livestock and equipment, on reasonably long terms and at low interest rates. Such credit should be accompanied by farm management supervision and other necessary technical help.

4. *Farm Drainage and Water Control:*

(a) In the areas outside those covered by P.F.R.A. in the prairie provinces there should be a special program to meet the drainage and other water control needs of farmers on an individual or local basis. The need is for the improvement of drainage ditches, particularly outlet ditches, construction of ponds, dugouts and dams and other necessary conservation measures. In establishing ponds, dugouts or dams the use of these for fire protection purposes should be kept in mind.

(b) In addition to the individual farm projects, assistance both federal and provincial could well be made available through the municipality for dealing with local or community drainage systems which cover a number of farms.

5. *Other Measures:*

Necessary programs should be instituted and made available to ensure the adoption of the following measures:

(a) *Programs to detect and check wind and water erosion:*

There is no doubt that extensive erosion does take place in Canada, due to the action of both wind and water—although the areas in which soils have been rendered completely or nearly unfit for use are probably not large. All possible measures should be taken to assist farmers in halting not merely the more spectacular kinds of gully erosion but the more gradual and insidious wearing away of our soils by wind and water. In some cases the practice of contour farming may be sufficient to prevent erosion and loss of fertility.

(b) *Programs to ensure maintenance of the fertility of our soils:*

All possible efforts should be made to determine the nature and extent of reductions in our soil fertility, and to acquaint farmers with what is happening to their land and the measures needed to prevent deterioration. This could include: suitable crop rotation, soil analysis, the application of lime where necessary, and advice as to the use of suitable fertilizers.

(c) *Programs of improvement of farm land:*

There should be programs to assist farmers with major projects of land improvement such as clearing, field enlargement and land levelling where these are necessary to proper utilization of his land.

(d) *Programs to correct flooding and river bank erosion:*

One of the principal needs under this heading which has been brought to the attention of our Federation is that of river bank erosion. Particularly in mountainous areas such erosion can be very destructive, and require extensive works for control. There are many known methods of correction against river erosion which vary according to the type of stream. These involve ditching, mattressing, and keeping the channel clear of obstructions. But in many cases of fast-flowing streams dams appear to be the only answer and these are often costly not only in relation to individual, but even district and provincial resources.

(e) *Programs for woodlot management:*

Woodlot management services should be provided with the aim of achieving the best utilization and conservation of woodlots. The need for research, and for the training of engineers and technicians in this field is considerable.

(f) *Programs of watershed protection:*

There should be programs that would ensure the protection of our watersheds through creation of watershed authorities where these would be advantageous, and the carrying out of necessary control works and reforestation.

(g) *Programs to combine necessary production adjustments with land use improvements:*

Though the need must of course be judged in relation to circumstances as they exist from time to time, it is worth keeping in mind that where the farm economy faces difficult problems of surplus production government action to assist the farmer may be combined with programs to encourage constructive conservation measures. For example, it might be wise to assist farmers to reduce grain acreages, if this appeared desirable, by payments for the seeding of grasses and legumes.

(h) *Programs of irrigation:*

There is no doubt that the use of irrigation to develop our land resources has a proper place in the long-term development of Canadian agriculture. There should be provision for technical services and assistance in constructing irrigation works, including small schemes, in any part of Canada where the stability of the agriculture and the general economy of the region, and wise land use, require that these be established.

DIVISION OF GOVERNMENTAL RESPONSIBILITY AND LEGISLATIVE NEEDS

In considering how these suggested programs should be undertaken, and who should undertake them; the Canadian Federation of Agriculture recognizes first of all that both provincially and Federally considerable work is now being done

and considerable legislation is in existence. The C.F.A. does not feel competent at this time to recommend in detail on ways and means. It believes very strongly, however:

1. That the joint responsibility of the Federal and Provincial governments of agriculture under our constitution, as well as the magnitude of the task that needs to be done, indicates a need for participation of both the Federal government and the provinces in these suggested programs.

2. That to do the job it is clearly required that there be the fullest co-operation of provinces, municipalities and dominion, and a considerable degree of co-ordination of activities.

3. That it will certainly be the case that the various aspects of a comprehensive land and water use policy will involve the administrations set up under several different pieces of legislation, both those existing at present, and those to be passed in future. It is of the utmost importance, therefore, that there be the fullest possible co-operation among all agencies concerned in developing their programs.

4. That much of what we are suggesting needs to be done, can and should be done through a comprehensive conservation and rehabilitation Act, as far as the Federal government is concerned. Such an Act should be administered by the Minister of Agriculture, and should be as broad and flexible as possible to ensure the greatest possible measure of co-operation with the provinces in necessary programs. Flexibility is important so that the Federal participation in provincial programs may vary according to the manner in which provinces wish to carry on their programs, and the emphasis which they wish to give to various aspects of the land use problem.

Special matters

Agricultural Lime Assistance:

The lime assistance program is a Federal-Provincial undertaking that in the Maritimes, Quebec, Ontario and British Columbia provides very valuable assistance and incentive to the farmer to apply lime to acid soils. This is a fundamentally important practice over very large areas, and the present policy of lime assistance should certainly be continued.

Feed Freight Assistance:

Another measure of special assistance to the farmer which greatly contributes to good land use in the Federal feed freight assistance policy. We believe that the freight assistance policy contributes to the balanced development of Canadian agriculture. It encourages increased acreages of hay and pasture in provinces naturally adapted to these crops. At the same time it tends to reduce acreages planted to grain crops in those provinces, thus providing a better home market for feed grains produced in the special grain producing parts of the prairie provinces.

Vocational Training For Farmers:

In this connection, we would like to refer briefly to the recommendations on vocational training for farmers contained in the Federation's official statement of policy on this subject. Good land use will clearly be greatly hindered unless our farmers receive sufficient training to enable them to adapt to our new and more complex farm technology. The C.F.A. policy in this regard is as follows:

1. Farm boys and girls should receive a minimum of Grade 10 general academic schooling plus 2 years of vocational training in agriculture or domestic science.

2. An aggressive and determined effort should be made to bring the benefits of good vocational training to a very high proportion of farm young people, and farm organizations should accept a responsibility for convincing farmers of the need; and seeing that facilities are provided.

3. Young farm men and women who leave school too early should be encouraged to resume their schooling through a balanced program of short courses, which may culminate in school of agriculture or university training.

Need For Professional Personnel:

A further problem in the educational field which exists now and promises to grow is that of training sufficient agricultural scientists, engineers, extension men, and other professional personnel without which most of the policies recommended in this presentation could not be carried out. The post-war years have seen an alarming decline in the proportion of students entering degree courses in agriculture, and ways and means should be found of reversing this trend, which is more marked from 1949 on.

CONCLUSION

In conclusion, the Canadian Federation of Agriculture would just briefly state again its belief in the soundness of the family farm as the basic economic unit in agriculture. It wishes to state also its confidence that given the cooperation of governments at all levels in developing sound land and water use programs Canadian Agriculture will be in the years ahead move forward in efficiency and productivity along with the rest of the nation—and thus retain its vital importance and value in the economic life of the nation.

Mr. Chairman, that is the conclusion of our statement. Before starting I forgot to introduce to you Dr. McKinnon, principal of the Prince of Wales College in Prince Edward Island, who has been asked to attend this session with us on behalf of that province.

The two gentlemen with me are Dr. Hope, economist for the Canadian Federation of Agriculture, whom I think most of you knew even perhaps before he came with us; and Mr. David Kirk, now secretary of the Canadian Federation.

In the questioning period if you care to ask questions in respect to these matters, I should like to have Dr. Hope and Mr. Kirk help with the discussion.

The Deputy CHAIRMAN: Perhaps you would also introduce the other gentlemen who came with you.

Mr. HANNAM: I should like to introduce Mr. Jimmie James, who is from the Farm and Fisheries Broadcasting department of the C.B.C.

We have with us this morning two young men who are on their way overseas on Nuffield Scholarships. The Federation handles the selection of these men. They are Mr. J. E. Brubaker, of Beamsville, Ontario and Mr. J. C. Kitching, of Carman, Manitoba.

The Deputy CHAIRMAN: Thank you, Mr. Hannam for your excellent brief. It reflects your own great experience and the thought that we knew you would give to it.

Lady and gentlemen, we would be glad to have you ask Mr. Hannam and his colleagues any questions you care to.

Senator BRADETTE: On page 1 of the brief, Mr. Chairman, at the end of the second paragraph, I read:

> It is not that Canadian farmers have found themselves unable to produce abundantly to meet the needs of its customers for food—quite the contrary, much of our problem at the present time may be found in an excess of production in relation to market demand.

I would say that that applies only to some agricultural products such as wheat or cheese, and at one time, to butter. At the present time you can go into a grocery store and on the shelves you will see rows of canned tomatoes from Australia, and also canned fruits from the United States. You will also find radishes even at this time of the year, as well as celery, lettuce, and so on. I would also include cabbage. These foods are all grown outside of Canada. It has often been stated in the House of Commons that cabbage cannot keep over the winter, but that is not true because we know with proper storage facilities cabbage can be kept the year around. Could you, Mr. Hannam enlarge on the point that our farmers should be given opportunities to supply more of our winter market for vegetables and so on?

Mr. HANNAM: I think that this sentence in our brief should definitely be interpreted to refer to the overall agricultural situations not alone in Canada, not alone just the Canadian picture, because today we are so much in competition with the farmers of the world, and this has happened in all agricultural countries, and in many countries that are not ordinarily called agricultural countries. We are thinking there particularly of the fact that in wartime all the agricultural countries were encouraged to speed up their production to supply food as a war effort, and we did that in an extraordinary measure. Then, when the war was over Governments through international organizations such as the United Nations Food and Agricultural Organization, urged us to speed up production more to feed a needy world. We did that. We kept on until we were getting into trouble at the time of the Korean war. As soon as the Korean war broke out the surplus we had became strategic resources. But again, from the world position, we have piled up surpluses in the major groups, but surpluses in the major groups only forced farmers over into other groups. Let me say it this way as well: the farmers of the world today are producing more abundantly than ever before. In Canda alone we have doubled our ouput per man since before the war. It is generally agreed and it is noted in the Gordon Report on Canada's Economic Prospects that agriculture has increased its productivity in the last 15 years to a greater degree than other industries. Now, then, along with that great productivity, importing countries too are producing more of their own needs than formerly, and we have helped under-developed countries to provide more of their needs. And moreover, world trade is not taking more farm products today than it did probably 30 years ago, and yet world trade in non-farm products is up 70 per cent as compared with pre-war.

Now, here is a combination of conditions affecting productivity and production in agriculture that has not been readjusted back to what the effective demand will take. And that is the position we are in: markets have not increased to the same extent that our production has.

That is what we are referring to there particularly, and even if that is the overall situation it does affect our Canadian position; but as far as our domestic market is concerned we are certainly consuming a very much larger percentage of our total production of agriculture than we ever did before. We are increasing the home market but we have not increased it sufficiently to keep all storage stocks and surpluses off the market.

Senator HORNER: As I understand it, Senator Bradette suggested that one of the causes of the decrease in the large Canadian market for farmers is the importation into Canada of potatoes and what have you. The consumer today wants everything just so fresh, and so these foods are imported. The consumer does not want storage cabbage, lettuce and potatoes. The

result is really not getting as large a share of the market as he did formerly. Industries are protected to a greater extent than is the Canadian farmer.

That is the point I think Senator Bradette was trying to bring out.

Senator BRADETTE: Certainly, that's my point.

Mr. HANNAM: There is no doubt but that secondary industries are protected to a greater extent in Canada.

Senator HORNER: For instance we import a lot of tinned beef from the Argentine. We are told that beef can be produced so much cheaper there because the cattle are on range the year round. But what we do in that regard is to import something of the order of 50,000 head of cattle into Canada, in tins every year.

Senator CRERAR: When was this?

Senator HORNER: Formerly that product was shipped to Britain and then sent over here. It had the Argentine mark on the cans. Even in the stores yet you will find the picture of the white-faced beast on the can.

Mr. HANNAM: I am perfectly happy to answer these questions, Mr. Chairman, but we mentioned in our brief that we were not entering into a general discussion of economic problems. But if we were talking on the brief that we presented to the Prime Minister and the Cabinet you would find in it half a dozen places where we deal with this matter and recommend that some tariffs be raised on some products.

The Deputy CHAIRMAN: Of course you were then dealing with economic policy?

Mr. HANNAM: Yes, we were dealing with economic policy. But we did not bring these questions into this submission, and purposely so. I have just told you that the world market is probably not taking any more farm products than it did thirty years ago, but, in trade, world markets are taking 70 per cent more then they did before the war. One of the reasons why the world market is not open to us in a larger measure is because today nearly all agricultural countries are being forced by their farmers and by their economies to support their own agriculture, to help their farmers in some way or other, and often that interferes with imports. So that if we put up too many obstructions to trade we are going to encourage the United States and other countries to do the same, and we shall reduce the total world market that is available for everybody. I think we have to keep that in mind, that we have to consider the long-term effects. That has not, however, prevented the Federation from asking for very specific things to be done, even in tariffs; and some of the things that we ask for were not in the budget, either.

Senator BRADETTE: The Federation, no doubt, are fully aware of the millions of dollars which the citrus fruit-growers in Florida and California, for instance, are spending for the enlargement of their fruit business; so much so that many Canadian people seem to believe that unless they have grapefruit or orange juice for breakfast they will need a doctor before the day is over. On the other hand you see very few Canadians drinking apple juice, which is a very good beverage, or taking peaches or grape juice. I suppose your Federation has been trying to deal with that difficulty too. In northern Ontario the dairies tried to make people believe that pure milk is not good for them any more, they must have milk without any fat, or powdered milk. The same sort of propaganda is reducing the use of grain products. Our fine young ladies do not eat much bread any more, because they imagine it will hurt them in some way. I believe that bread is still the staff of life. Is there anything that your fine organization is doing to

counteract that kind of thing, either on the federal or the provincial level, doing it continuously, because such ideas as I have mentioned are poisoning the minds of our people dietetically. I read the other day an article by an American dietician, a very handsome man, whose appearance may commend him to many readers, in which he said that 90 per cent of the hogs in the United States and Canada are unfit for human consumption, that their livers are diseased. I know that is untrue. But it is something which we must counteract. Lots of people won't touch hog meat because they think they will be poisoned and will lose their health.

Mr. HANNAM: I imagine, Senator, you mean that counteraction should be by educational processes, not necessarily by regulation. It is true, and everyone knows it, that the processing industry and other secondary industries spend many times as much money in advertising to promote their products as agriculture does. Everybody takes for granted that milk and bread and meat and eggs and butter are natural products which everybody wants, and that they do not need to be advertised.

The CHAIRMAN: Canadian agricultural interests are doing much more advertising than they did, especially the dairymen, are they not?

Mr. HANNAM: Yes. I was going to mention that. I do not know that we have a large program in all branches of agriculture, but today many branches of agriculture are doing quite substantial work in this direction. The dairy farmers, for example,—and I am one of them—take a deduction of the proceeds of all milk in the month of June. Last year they raised $371,000, and that money is being spent by their organization executive in advertising milk in the schools, and the consumption of all dairy products. Recipes are issued for the use of various dairy products, and so on.

Senator HORNER: One of the difficulties mentioned by Senator Bradette as bringing about a change in people's habits is that working hours are shorter and people sit down more. If you could get them running around and working as they used to do they would consume more of these staple products.

Senator BRADETTE: They "run around" quite a bit yet.

Senator HAWKINS: Mr. Hannam, I should like to have your opinion on three questions. One has to do with the matter of a special credit agency, referred to on page 7 of your brief, to establish credit facilities "on reasonably long terms and at low interest rates". Is your suggestion that there should be a subsidy by way of low interest rates, or only that there be the lowest possible economic rate?

Mr. HANNAM: I do not think that our organization has studied the question of any particular rate.

Senator HAWKINS: I know they have not. It is just an opinion that I want from you. There is a special reason for my question.

Mr. HANNAM: Yes, we are thinking that low interest rates may be a way perhaps one of the best ways, of giving assistance to these people. We are assuming that where there is a marginal or submarginal area, distinctly marked as such, it is necessary to go in there and help to improve that area, and that this will cost money. Maybe it could be done by giving them credit at low interest rates to help them to do their job. Probably that is one of the best ways of doing it.

Senator HAWKINS: I am rather concerned with agricultural credits generally.

Mr. HANNAM: Oh, we are dealing here only with credit for rehabilitation and re-establishment.

Senator HAWKINS: Maybe any agricultural credit that is extended by the state might be considered to be on a rehabilitation basis, because they are looking for terms and rates that are not available from what may be called commercial loaning institutions. I do not want to get any idea of a specific rate into it at all, but would you consider that loaning against agricultural land collateral was sound if it included in the rate a subsidy? That is about the simplest way I can put it. If the money was costing 3½ per cent and you loaned it at 3 per cent, or if it cost 4 per cent and the loan was made at 3½ per cent? This is not a critical question. I want your opinion.

Mr. HANNAM: I would say we think it should be loaned to these farmers below, and considerably below, the commercial rate.

Senator HAWKINS: A rate without profit to the lender. Would you go below that?

Mr. HANNAM: I don't know exactly what it would cost the Government.

Senator HAWKINS: That is easily found out.

Mr. HANNAM: Certainly, in any case, as low a rate as it costs the Government.

Senator HAWKINS: Thank you. My next question is about something on page 8, and has to do with water control. That, of course, is a very broad subject, and I do not want to ask you too much about it. But you talk about dams for controlling streams, and all that sort of thing. How far have you gone into the question of better forest coverage for these areas, as a cheaper economic approach to water control than dams would be?

Mr. HANNAM: We have not gone into details on this program. I would agree with you that where it could be done by reforestation—

Senator HAWKINS: It could be done almost any place in Canada by reforestation.

Mr. HANNAM: If it is done on a large enough scale I suppose it can. It can always be done with very fast-running streams.

Senator HAWKINS: That is the best area to do it on, because you have the best drainage there, and that is a necessity for good forest coverage—good drainage.

Senator HORNER: It would depend somewhat on the stream.

Senator HAWKINS: Mr. Hannam, on page 10 of your brief you recommend that "much of what we are suggesting needs to be done, can and should be done through a comprehensive conservation and rehabilitation Act, as far as the federal Government is concerned." You recommend that such an Act should be administered by the Minister of Agriculture. Well, land use is a very broad subject and involves every citizen in Canada. It is true that the question of land use is vital to the agricultural industry, but it involves a lot of other industries. I am wondering if it is your considered opinion that this matter should come under the Department of Agriculture?

Mr. HANNAM: I would say that this is the considered opinion of the national committee of the Canadian Federation of Agriculture.

Senator HAWKINS: That it should be under the Department of Agriculture?

Mr. HANNAM: Yes. It is not so much that we are narrow in our point of view but it is this. For example, a large program like this is set up with a minister or someone of almost ministerial level heading it, a person who is not close to agriculture and agricultural programs. When this happens there is always the danger that land use from the standpoint of agriculture will not get its fair emphasis.

Senator HAWKINS: Do you really think there is any danger such as that? I am not going to pursue that. I do want to say, however, that in my opinion you have submitted a wonderful brief and I am personally indebted to you for it. I know the other members of this committee feel likewise. It is an excellent brief and will serve a very useful purpose.

Mr. HANNAM: Thank you very much. I know that in our own province projects affecting highways, hydro-electric power, pipe lines, and so on, which do not come under the Department of Agriculture, have no regard to agricultural land. The highways, power lines and pipe lines are run through and over valuable farm property. They just go wherever they want to go without any consideration for agriculture. We have seen that happen too often.

Senator HAWKINS: Of course, consideration should be given also to the rest of the people.

Mr. HANNAM: I appreciate that.

Senator CRERAR: In regard to the last point raised by Senator Hawkins, Mr. Hannam, I understand you contemplate under paragraph 4 of page 10 of your brief that this matter should come under the federal Department of Agriculture?

Mr. HANNAM: We say, "Such an Act should be administered by the Minister of Agriculture."

Senator CRERAR: That would be the federal Minister of Agriculture?

Mr. HANNAM: Yes. Paragraph 4 here refers to the federal part of the work.

Senator CRERAR: There may be a question of conflict between federal and provincial jurisdictions and one of the things that is very active in our public thinking today is the possibility of such conflicts. It occurs to me that you might get into a field of difference of opinion with the provinces on the matter of jurisdiction, which is very important. However, that does not derogate at all from the importance of the suggestion that has been made.

I was going to make a remark, Mr. Chairman, on the discussion that was initiated a little bit earlier by Senator Horner and one or two others. I refer to the question of control through tariffs. May I ask Mr. Hannam this? In your submission to the Government what illustrations did you give with respect to protection that might be invoked for Canadian farmers?

Mr. HANNAM: On tariffs?

Senator CRERAR: Yes.

Mr. HANNAM: Well, I suppose one of the best examples would be in connection with milk products.

Senator HORNER: Cheese.

Mr. HANNAM: Canada is and always will be a high cost area for the production of milk. It is one of the highest in the world and it must be so on account of our climate. Australia and New Zealand, particularly New Zealand, are among the lowest in the world. I think probably that new Zealand has the lowest costs in the production of milk products because of their natural conditions and the fact they have no winter. They have no wintering expenses, and so forth. They can ship cheese and powdered milk into Canada with a one cent a pound tariff. That tariff was established in 1931 when prices were very low. Today that tariff means nothing to them. We have maintained here —and we have also said this to the New Zealand farmers,—that this tariff is not fair. They can produce dairy products for about half the cost of what we can produce them for here in Canada. It is not a large volume of the trade which means a great deal either to their farmers or their economy, for they only ship here once in a while. However, they do send small shipments

from time to time, and these come in here and disrupt any *bona fide* marketing programs that we have. These programs can be completely upset by such shipments, and even if the shipments do not come the very threat of them depresses our farm prices unduly.

If there is any excuse anywhere for tariffs, I think the milk industry can qualify on any ground that any other industry argues it needs tariffs.

Senator CRERAR: That would apply to, say, potatoes and apples.

Mr. HANNAM: Well, not so much.

Senator CRERAR: The potato growers and apple growers think so.

Mr. HANNAM: One of our great potato growing areas is in New Brunswick. There is also a great potato industry across the border in the United States. The whole area is a great potato producing one. Now, the potato men are asking for an increase in tariffs, but our people are not asking officially for as much tariff protection as the United States people are asking against our potatoes.

Senator CRERAR: I agree with you, but look for a moment at the general principle. We can either use our influence in Canada to improve world trade by the removal of restrictions on international trade or we can take the other course. Theoretically our country could protect its agriculture and its economy against any other country through a system of tariffs. That would ultimately result in each country freezing on its own iceberg. I have always maintained that in a game of that kind Canada would have far more to lose than it would have to gain. That is to say, if we were to impose certain tariffs against, say, the United States on agricultural products, the United States could retaliate by saying, "Well, two can play this game" and they might raise tariffs against our agricultural products. In such a contest who would be the final loser? I think it would bound to be Canada.

While Senator Horner speaks of some imports from the United States coming into Canada, we must not forget that a very large market exists in the United States for many of our agricultural products, a market that is steadily and constantly expanding.

Senator HORNER: What are our particular markets in agriculture that are expanding in the United States?

Senator CRERAR: One is our market for coarse grains.

Senator HORNER: No. There is a quota there. Don't forget that the Americans grow hundreds of millions of bushels of corn.

Senator CRERAR: Notwithstanding what Senator Horner said, we are exporting more and more coarse grains to the United States.

Senator HORNER: Not so much, really. Just look at the market.

Senator CRERAR: Take our forest products. Our biggest market for forest products of all kinds is the United States. Our biggest market for fish is the United States. Are we going to get into this business of trying to cut each other's throats? I certainly hope that Mr. Hannam and the Federation of Agriculture will not support any policies of that kind.

Senator HORNER: The first law of nature is: man, mind thyself. Senator Crerar has mentioned fish. Well, the Americans want fish and they can get it cheaper from us. Practically anything they produce they put a quota on. They all came back from Geneva after signing a certain agreement, and the ink was hardly dry before the United States broke the agreement with regard to our exports.

There is another matter that enters into it, namely the freight rates and the diversification of schedules to certain points. Vancouver and Victoria are huge markets for meat and other products, yet meat can be shipped a

distance of 8,000 miles from Australia or New Zealand and marketed cheaper in Vancouver or Victoria than it can be shipped by rail from Calgary to that same market. That disparity has increased since the freight rates increased.

Senator STAMBAUGH: Mr. Chairman, may I say that while this discussion on tariffs and freight rates is very enlightening and we are all very much interested in it, I am doubtful that we should get into it before this committee. I think it is out of order.

The DEPUTY CHAIRMAN: I think you are right. I do not believe we can settle the tariff question here.

Senator CRERAR: We certainly cannot, there is no doubt about that.

Senator HORNER: Mr. Chairman, I disagree with what Senator Stambaugh has said. The reference to this committee is broad enough to allow us to discuss almost anything and everything that affects land and the products from it.

The DEPUTY CHAIRMAN: That is quite true, but I do not think anything can be accomplished by our getting into a heated discussion at this time.

Senator Crerar, have you further questions?

Senator CRERAR: The Federation has presented a most interesting brief, and one which requires much thought on the problems therein discussed. I gather the impression from the reading of the brief that if the recommendation were carried out it would mean very substantially increased government expenditure at both provincial and federal levels. You speak of co-operation at the municipal level, but that is bound to be practically nil. The problem facing us today is to get enough revenue: Spending is constantly increasing, and taxes almost continuously on the rise—that is certainly true of certain provinces.

In view of that situation I wonder where these recommendations will lead us. That of course does not deny the importance of the recommendation, but one is bound to wonder if the Federation has given thought, first to the total amount of the money that might be required to implement those recommendations and, secondly, how that money should be secured.

Mr. HANNAM: It is true that we have made quite a number of recommendations, the cost of which would I suppose add up to a considerable figure for the carrying out of a national program on conservation. But such a program cannot be achieved without considerable government expenditure. However, I doubt if in this program we have suggested anything that would require exceptional spending. We think that the whole program could pretty well be carried out without undue spending.

From my own observations, most countries, and certainly the United States are spending proportionately a lot more for conservation, particularly of their forest land and woodlots, than Canada is. You must remember that one of the main thoughts in this brief, though it is not said in so many words, is that we need a national program and a national policy that will co-ordinate all the efforts that have been put forth, and improve on them.

Now, Canada, that is the federal Government and the provinces, can go into that program on any scale they choose. We are anxious that a program such as this get started, even if it starts on a small scale. If it gets off in the right direction, and is properly developed, I think the people will support whatever expenditure is required to do it. That is my thought with respect to expenditures for the program as suggested.

Senator HAWKINS: In other words, you would think that the original investment would be revenue-producing in time?

Mr. HANNAM: Yes. In any case, the problem of marginal and submarginal areas in Canada is a special problem in agriculture, and one that concerns Canada as a whole. We have never had a particular program that has faced that problem. Now we think the time has come when we should attempt to find a solution within agriculture itself, that may help us to administer our program in the other branches of agriculture. For instance, the commercial farmer is doing very well. If you take out the marginal and submarginal areas, and deal with them separately, it will help such areas to get on their feet, and we will have to pay whatever it costs to do it.

Senator CRERAR: Take the case of the farmer who is attempting to carry on his farming operation on submarginal land, and because of this natural handicap he cannot make a success, do you think he should be assisted to move somewhere else, where he would have a chance to succeed. Would it be a fair question to ask, why he went on the submarginal land in the first place. That farmer went to the submarginal land from his own choice. Do you think as a matter of principle that the state should come to his assistance when through his own error he finds himself in difficulty?

Mr. HANNAM: If you can tell us how many of those farmers are in that position due to their own fault, it would be helpful, Senator Crerar. By that I mean that some farmers are in such a position through no fault of their own.

Senator BRADETTE: Most of them would be in that class.

Mr. HANNAM: Yes, I think most of them. A farmer goes to a certain farm because that is the land he can afford to buy, and he does not have the credit backing enabling him to buy better land; he is afraid to risk whatever savings he may have in the family pot by going into debt too heavily in case he loses what he already has.

The DEPUTY CHAIRMAN: And many of them went on their land before the soils were analyzed, and they did not really know how poor their land was.

Mr. HANNAM: Yes. And perhaps we cleared, or allowed to be cleared, a good deal of land in Canada that should not have been cleared, but should have been continued to be used for woodlots.

Senator HORNER: The use of the words "it is not his own fault" are to me most dangerous words. I do not know any attitude that can ruin a man more quickly, than to assume that what happens to him is not his own fault. It is true, however, that because of certain conditions in parts of Alberta, and through certain areas in Saskatchewan, there were mass movements of people after the blow and the dry years, and it was decided that the farms should be used for ranching and no other purpose. These people were moved in a mass movement to the Peace River district. Lands were homesteaded on, and grain was grown in parts of Saskatchewan where the orignal Prairie grass should never have been broken up, because it has been almost impossible to replace that grass up to this day.

In spite of these examples of where the people in whole areas have been moved, that does not detract from what I have said, that a man is responsible for what happens to them. There are many, many cases where it is their own fault, and no one else's and yet they would use the excuse that it was not their fault when clamouring for assistance from various agencies.

Senator GOLDING: I should just like to ask Mr. Hannam if the proposals set out in this brief have been carefully considered by the Federation. I take it you have a feeling that these investments over a long term of years would show a good return if such a program were carried out? That is the conclusion you have reached?

Mr. HANNAM: Yes, senator.

Senator GOLDING: I think you are absolutely right.

The DEPUTY CHAIRMAN: Dr. Hope?

Dr. E. HOPE: Mr. Chairman, I just want to enlarge a little on this question that Dr. Hannam mentioned and referred to by Senator Crerar, as to whether people remaining on sub-marginal land are doing so through their own fault. I think we should bear in mind that in many places in Canada, including the Maritimes and Ontario, where people are working sub-marginal land, that these lands were not sub-marginal when they were first farmed. The technology of farming in the days when they went on that land, in some cases 100 years ago, in some cases 60, or 40 years ago, was entirely with horses, mechanical power was not available at that time, of course. In those days they farmed hills and stony land with horses very successfully. As time has gone on a change to mechanization has taken place and these farms have therefore moved from being above the margin to below the margin. You can go through New York State and find that some lands that were good farms 200 years ago are today abandoned. Why? Because they are not suitable for mechanical operation. You cannot farm hilly land with mechanical power. Now, in the future, any farmer continuing to use horses will eventually have a low standard of living, and in the end horses will be driven out completely. As I say, many of these places are today called sub-marginal were at one time marginal and it is coming to the point where the people working them cannot make a living. That is one kind of farmer quite common in parts of Quebec and in parts of the Maritimes. In the west many of these people are in that position because of errors made by the federal Government, when 30 years ago, in homestead days, it sold land at $3 an acre, land that in those days was marginal but they did not know it. People went on that land. It is true a lot of them have moved off since, but in many cases the responsibility lies with the federal Government in opening up that land for settlement, land which should not have been opened up on the basis of present day knowledge.

The DEPUTY CHAIRMAN: It was not through any fault of the Government, it was that the Government did not know.

Dr. HOPE: The Government did not know, no, and therefore there is some responsibility on the part of the Government to help these people. And maybe the Canadian Pacific Railway and the Hudson's Bay Company are partly responsible, again through a lack of knowledge. But today with our knowledge of land and its capabilities we know that many of these areas should be in other use. I would say that very few people today actually have gone out and bought a piece of sub-marginal land and started to farm it. In many cases land which is so worked today has been worked by a family for generations, and for that reason it is difficult to get them to move. We are suggesting therefore, that the state should take some interest in helping to relocate these people.

The DEPUTY CHAIRMAN: These isolated places that you speak of are so situated that they could not be added to or combined to such an extent that they could be made into economic units to be operated by machinery?

Dr. HOPE: That is right. In quite a few places in the Maritimes, and in parts of Quebec, and I should imagine in some parts of Ontario, they are not adapted even to large scale units. Some people recommend taking the sub-marginal lands and combine them into bigger farms, but there are many places where a farm of 100 acres, say with 40 acres of arable land, may be composed of 10 different fields and they are separated by physical obstructions, by ravines, rocks, and the fields could not be joined, so in the combination of these farms into a unit, the result would be a non-economic unit.

Senator CRERAR: I understand you were just speaking of land that could be put to better use, such as for forestry?

Dr. HOPE: Yes, that is what we are trying to say, that sub-marginal land could be used for good forest projects. It needs good planning. Now, coming back to the brief; I think there are two central points in the brief, one is, as Mr. Hannam pointed out at the beginning, that we have to have a good inventory of our land resources in Canada in all provinces, and it is very doubtful if we have it today. We have it in spots, piecemeal here and there. A soil survey has started and good work is being done but they need help and money and more staff. Then we need economic services to locate, to mark out what the people believe to be sub-marginal areas, and from there you can start to work. The second point is, the point raised on page 10, paragraph No. 4, the question of a federal act. I think perhaps Mr. Hannam forgot in reading the brief to say that this brief was prepared as a result of the co-operation of the Canadian Federation of Agriculture organizations in all provinces. All provinces sent representatives to a two-day policy meeting on this brief, to study it in every detail. In addition to that all the provinces prepared statements on soil conservation covering each province, for our last annual meeting. This brief is the combined effort of people from across Canada.

We discussed at great length this question raised in paragraph 4, as to how could this job be done. We looked at the work of federal authorities like the T.V.A. in the United States, and all sorts of questions were brought up and discussed and thrown out the window. We finally came to the conclusion that to a certain extent we could take our model from the Prairie Farm Rehabilitation administration. This, as you know, is a flexible organization, and so organized in the provinces of Saskatchewan, Alberta and Manitoba and even in British Columbia, but how it works in each province is completely different in some respects. In Alberta the P.F.R.A. does not establish community pastures; it does so in Saskatchewan and in Manitoba. But Alberta has its own program of community pastures and it is working out very well. I will read the paragraph from our brief, the one that deals with this question.

> That much of what we are suggesting needs to be done, can and should be done through a comprehensive conservation and rehabilitation Act, as far as the federal Government is concerned. Such an Act should be administered by the Minister of Agriculture, and should be as broad and flexible as possible to ensure the greatest possible measure of co-operation with the provinces in necessary programs. Flexibility is important so that the federal participation in provincial programs may vary according to the manner in which provinces wish to carry on these programs, and the emphasis which they wish to give to various aspects of the land use problem.

We have no conflict there. We feel however, that Quebec should come in on this. We feel they want to, but that thy want to do it in their own way. Ontario wants to do it in her own way too. That province has some very good legislation. We believe that the drafters in framing that paragraph want to say that the provinces should come in under their own terms, and that the federal authority would help to co-ordinate the whole program. We thought this was about as far as we could go and we tried to get all the provincial people in agreement. The word "flexibility" is very important. We do not want to have this thing so rigid that one province will say "you are trying to take all authority away from us and so we won't play ball." That is why we used that word "flexibility".

Senator CRERAR: In other words Dr. Hope, the P.F.R.A. is really operating in some provinces with their consent?

Dr. HOPE: Yes, in many cases under provincial enabling legislation.

The DEPUTY CHAIRMAN: Senator Molson, have you a question you wish to ask the witness?

Senator MOLSON: Yes, Mr. Chairman. I would like to ask Mr. Hannam a couple of questions. The first has reference to a statement in the brief at the bottom of the first page: "It is not within the scope of this presentation to discuss the many problems of markets and marketing." I would like to say first of all that I am very favourably impressed by the brief. I would like to compliment Dr. Hannam on it. But I would like to ask him if he does not feel that this committee, in dealing with the problem, must go into that phase of it very exhaustively in order to get an answer to this problem of land use.

Mr. HANNAM: Well, we would be very happy if the committee feels that way about it. We do say that all of these issues are closely related to the question of land use, and it is doubtful if you can discuss a land use program adequately without going into these economic questions. But at the same time, our presentation to the Cabinet is a big document, on the economic program, and we felt that we should confine ourselves to the particular issues involved in land use here, other than economic. That was just our interpretation of what you as a Committee might want us to do.

Senator MOLSON: Without suggesting that that was not a problem before us of great magnitude.

Mr. HANNAM: That is right.

Senator MOLSON: The second question I would like to ask is this, referring to subparagraph (c), page 6: "Adequate surveys should be made of our water resources." Do you consider that water pollution is one of the problems connected with water resources?

Mr. HANNAM: I would say yes. It is not so much an agricultural problem, but by all means it should be included in a program of this kind. At least I would say so. It is more of an urban and suburban problem, perhaps, than it is of an agricultural problem; that is all.

Senator MOLSON: But in the over-all picture of land use you would feel it is of importance?

Mr. HANNAM: Right. I think it should be included.

The CHAIRMAN: In the Maritime provinces there are some rivers which overflow their banks in the spring, causing a very heavy erosion. Do you think it would be possible to have the principles of P.F.R.A. extended to the provinces in the east, for the deepening and straightening of rivers where the water is retarded, perhaps, because of some rocky bed, or perhaps a twisting narrow rock-covered bed? Don't you think it would be possible?

Mr. HANNAM: I would think so. Our thought is this, that the P.F.R.A. is a land use program that has been very successful in a specialized area, under a specialized program for that area. But, take for example, an Ontario point of view, I feel personally that the drainage problem is as important in the Ottawa valley and in many parts of Ontario as the problem that is faced by P.F.R.A. on the prairies; that is, that is a very, very serious problem. I do not think there is any program that would help the Ottawa Valley more than a good drainage program,—an adequate drainage program. But it is not likely to be done by the individual farmer, and it is not likely to be faced by the municipalities, because the cost would be too much, for large machinery and so forth. Yet these people need encouragement and help; and if this were offered to them, the same as the P.F.R.A. offers assistance in the Prairie provinces, a great improvement could be made in our agricultural provinces, particularly in eastern Canada.

Senator WALL: Dr. Hannam, there is a special reason—let me put it that way—why I am very sympathetic to the problem you raise on page 11, dealing with vocational training for farmers. The general policy of your organization illustrates two or three general principles. I am intrigued by what you might wish to tell me concerning how you see the problems of vocational training in terms of facilities, in terms of the kinds of changes which must be made in our educational apparatus, especially in the rural areas where there are one-roomed high schools and one teacher trying to teach all courses of the curriculum; with vocational training as such probably in the larger schools or the boarding-type schools, which would be of high stature educationally and would bring to the system the kind of people in the kind of numbers that it needs. I am just prodding, and wondering whether the general principles have been considered more specifically in the kind of thing that the C.F.A. would be willing to encourage.

Mr. HANNAM: I wonder if Mr. Kirk would answer that.

Mr. KIRK: I think that probably the first principle here in the minds of the Committee that—again—studied this educational problem and drew up a policy on this matter was their concern, that, whatever type of institution was set up, it should be a bona fide agricultural school, giving an adequate course. They were concerned that there should not be a rather half-baked agricultural vocational education spread all over through a lot of rural high schools where they could not really do a job. They did feel they could not define too exactly how the job should be done. There are places where there is a combined sort of high school—

Senator WALL: A comprehensive school.

Mr. KIRK: —a comprehensive school, which is working adequately if it is done on a sufficiently-determined basis, with adequately trained men and facilities. I think there are a great many agricultural and vocational courses in agriculture which do not stand up to examination as really adequate vocational training, and our committee has a feeling that the thing to do is to do the academic job right first of all, and then do the vocational job right, either through schools of agriculture, such as at Saskatoon, or the other kind, starting from the colleges, or even through a comprehensive high school program, if it was really comprehensive and doing the job well. They were not dogmatic on this question.

Senator HORNER: You are familiar with the schools at Olds and Vermilion, Alberta?

Mr. KIRK: I understand that that is another program. It differs from, say, the Saskatchewan program. It is more decentralized.

Senator HORNER: It has been established a long time and has turned out specially-trained young men and young women. They board in; they stay right in the school. Senator Stambaugh will know them both well. They have been working a long while, and working well.

Senator WALL: I would like to see, scattered at strategic points through each of our provinces, schools for these young farm people where they could learn these things and learn them well. These schools should have all the facilities necessary to attract these people to them.

Mr. KIRK: One of the recommendations is that where such schools are established, the agricultural teaching staff should be employed on a full-time basis. I think this is what you mean, that the program be a part of the life of the area served by the school, and that these men be there winter and summer and that in between times they could remain in the area and help to carry through the program.

Senator BRADETTE: You have mentioned men. Would you include women in this? They are using women for this purpose in Israel.

Mr. KIRK: Yes, I would include women.

Senator TAYLOR (*Norfolk*): With regard to drainage in the Ottawa Valley, it has been suggested that some financial assistance on a municipal or a provincial basis should be given for this purpose. This is what was done in Essex. It was a low and poorly drained area, but through provincial financial assistance a drainage program was successfully carried out. Is that what Mr. Hannam suggests for the Ottawa Valley?

Mr. HANNAM: Yes.

Senator BRADETTE: Mr. Hannam, reading from your brief I see: "In the case of lands which are definitely submarginal, there should be a program under which farmers on these lands may be given an opportunity of selling their farms to some public authority."

In my opinion there are only two authorities which could buy that land, the municipality involved or the provincial government. In your fine brief you have mentioned the co-operation we must have between federal and provincial authorities. We all realize, of course, that the federal Government could not expropriate land of that nature. I suppose that is what you mean in your brief?

Mr. HANNAM: Yes, either that or together they might set up an authority to carry out this program. In this regard I have in mind the Federal District Commission in connection with city property. We are not saying how it should be done. We simply recommend that something like this should be done. As you say, it could be done by the municipal or by the provincial government. However, it might be done in accordance with provincial and federal legislation if a special authority were set up to do it. That would have to be done for the most part under some provincial authority but probably with the assistance of the federal Government.

The DEPUTY CHAIRMAN: Mr. Hannam, the members of this committee are interested in trying to keep more of our young Canadian people on farms. From your experience have you any idea of how the Ontario Act is working out under which financial assistance is being given to keep young men on farms? I understand loans are being made at low interest rates for this purpose. Has that been a satisfactory program?

Mr. HANNAM: I do not know the details of that too well. Perhaps Dr. Hope would have something to say on it.

Dr. HOPE: The junior farmer classification takes in farmers up to the age of 35. The borrower may get a loan based on 85 per cent of the appraised value of the farm. The loan is payable at 4 per cent and is amortized over 20 years. The national office of the Canadian Federation of Agriculture is not concerned with the legislation of any particular province, but we do now and again hear some complaints from local federations. For example, we have read in the farm press where the Act in Ontario has been said to be a little conservative in its administration. There is a representative here from Ontario and perhaps he could expand on this subject. Probably very often it is the case that a young man starting farming does not have sufficient capital, and the appraised value of the farm may be too low in his opinion. Incidentally, that applies to the Canadian Farm Loan Board as well on a federal scale. Therefore, because of the low appraised value, the 85 per cent of the appraised value in the case of the Ontario loan is rather low with the result that the farmer hasn't got sufficient money to buy the farm. That may be why some complaints are made, but as I understand it the Act has worked reasonably well on the whole and a number of young men have been successfully settled under the Act.

A similar Quebec Act is much broader. The province of Quebec is spending a great deal of money to establish young men on farms.

The Deputy CHAIRMAN: Do you say that the Acts are similar?

Dr. HOPE: The Quebec Act is more generous. The loan is payable at 2½ per cent and is amortized over 39 years. However, the capital loan is not so great. At the present time I believe it is $7,000 but they are going to increase it to $8,000. They will end up with 65 per cent of the appraised value of the farm. I might point out that the province of Quebec has loaned more money under this scheme than the Canadian Farm Loan Board has loaned in all of Canada.

Senator HORNER: What have their losses been?

Dr. HOPE: Practically nil. They have received each year in advance payments more than the contractual payments called for.

This certainly shows that in the province of Quebec the scheme has worked quite successfully. Of course, the interest rate of 2½ per cent is low.

Senator WALL: Dr. Hope, while you are on your feet may I ask you this question? Is there any economic validation for this thesis that I would advance? From the point of view of economics is it sound to advance money to people through special credit agencies so that they may help themselves and thereby eventually save money in forms of other national treasury payments which might be obviated or blunted in the end? Is there any economic validation for that? Could you satisfy me that if we advanced more money through special credit agencies, that in the end we would save money with relation to other things where we might be paying money out? Is that good business?

Dr. HOPE: Yes, I think it is good business. Our recommendation has to do with land which we designate as marginal. We feel that farmers who live on their own resources will always remain on the land.

With the cost of capital development of farms and the lack of assistance, submarginal farmers will stay down and will become, as they have in some municipalities, a sort of rural slum area. The general tone of the whole nation is lowered by such a group of people. They get down so low that they are unable to help themselves out of the rut they are in. A special effort should be made on a national basis to get them out of that position.

That of course does not mean that we would recommend that anybody on marginal land should receive a loan. Rather, we have in mind a program like that now operating in the United States, called Home Improvement Loan Assistance. This assistance program is not connected with the farm credit administration, but is a separate organization which gets its funds directly from the central government for the assistance of people in such areas as we have been talking about. The farmer applies to the agency in his county, where there is an advisory committee composed of three good local farmers who work with the administrator of the act in that county. Farmers who make application for and obtain loans are supervised in the re-organizations of their operations. Also they have to pass, so to speak, the dragnet with respect to personal ability, knowledge and initiative to test whether or not they are a good risk. The Government is of course not interested in subsidizing a ne'er do well, but there are a great many who are regarded as deserving of assistance.

This program has been carried on in the United States on the basis of 4 per cent loans amortized over 25 years, with strict supervision of the work being done by the farmer. The agency supervises the re-organization of the farming operations over a 10-year period, and a representative looks in to see him from time to time to see that he is following the plan. In this way the result show that marginal farmers can become better citizens, increase their general productivity and raise the standard of living of their families.

We believe that a subsidizing program, whether it apply to gold mining or farming must be in the national interest, and not apply only to a little farmer or a little miner. We have convinced ourselves that this type of subsidizing program is in the long run in the national interest, and we would hope that this special committee of the Senate would convince itself that whatever subsidy is involved for such a program would be in the national interest.

SENATOR WALL: Would you define the national interest in purely pragmatic terms as being economically a paying business?

Dr. HOPE: Yes and no. We of course cannot say that all subsidizing programs are in the national interest because of economics. Because to define national interest economically is a pretty narrow definition. For instance, it may be in the national interest to eradicate slums—that is a social undertaking—but you could not prove it by economics. We would like to see whatever farmers are left in this country able to produce to their maximum and have an opportunity of a reasonable standard of living, with some governmental assistance.

It should also be pointed out that the Canadian farmers are in competition with farmers all over the world. We are in competition with the Australian farmer, the South African farmer; if they are not sending their products here, they would like to, and perhaps we would like to ship some of our products to their country. So, we have that competitive race the world over. As Dr. Hannam has pointed out, every country, without exception, is taking an interest in agriculture and helping it to become efficient. If we choose to leave the free market alone and offer no subsidies, eventually the marginal farmer will drop off here and there, on the basis of sound, hard economics, but in the long run our costs would go up and we would have to ask for greater tariff protection against products coming here.

We believe that the type of subsidy we recommend would in the long run increase our productivity and tend to improve our competitive position with other nations. To that extent the desire for further protection might be lessened somewhat in the small things, but in the national interest we should have a sound, healthy agriculture and no rural slum areas.

SENATOR WALL: I hope, Dr. Hope, you will not misunderstand me. I did not want to define national interests only in economic terms, with all its other ramifications.

Mr. HANNAM: We want to raise the general stand of citizenship, particularly in rural areas.

The DEPUTY CHAIRMAN: I am sure we will be very pleased to accept this or Dr. Hope?

Mr. HANNAM: May I say, Mr. Chairman, that at our annual meeting in January, when we were preparing for this presentation, we asked each of our provincial federations to bring forward a statement of their views before we would discuss it on a national plane. We took almost a half day at our annual meeting for such a presentation, and we have had stencilled the statements received from each of the provinces. Mr. Kirk has copies of them here, and while we are not asking that they be put on your record, if the members of the committee would like to have them, we would be pleased to leave them with you.

Hon. SENATORS: Hear, hear.

The DEPUTY CHAIRMAN: I am sure we will be very pleased to accept this additional information.

May I say, Dr. Hannam, Dr. Hope and Mr. Kirk, that I should like to express the sentiment of each and every member of the committee in grateful

appreciation for the time and thought you have given to your presentation. I am sure your recommendations will receive careful consideration. It may be that as the study and discussion of this problem proceeds, we will have to ask your further attendance.

Members of the committee, the Ontario delegation has not yet arrived. With your approval, we will adjourn now to meet again at 4 o'clock this afternoon.

Whereupon the committee adjourned.

AFTERNOON SESSION

THURSDAY, March 21, 1957
4.00 p.m.

The Deputy SPEAKER: Honourable members of the committee, we welcome today the delegation from the provincial Department of Agriculture, Province of Ontario. It was very kind of these gentlemen to come and give us the benefit of their knowledge and advice and their recommendations.

We have first, Mr. J. A. Garner, who is Chief Agricultural Officer of the Ontario Department of Agriculture. We will ask Mr. Garner to introduce himself and his colleagues.

J. A. Garner, B.S.A., Chief Agricultural Officer, Ontario Department of Agriculture.

Mr. GARNER: Mr. Chairman and members of the committee, I want to say on behalf of my colleagues and myself that we welcome the opportunity of appearing here and we hope that some of the things we say will prove of value to the Committee.

Associated with me today is professor N. R. Richards, Head of the Department of Soils of the Ontario Agricultural College. In addition to that he serves in a number of other fields. He is Chairman of the Ontario Fertilizer Committee and has been one of the experts who have been associated with the Dominion Department of Agriculture in developing a soil map showing the soil resources in the Province of Ontario.

Also with us today is Dr. H. L. Patterson, Director of the Farm Economics Branch of the Ontario Department of Agriculture. He has been in charge of many of the studies that have been undertaken in the province for the Ontario Department of Agriculture. In addition, and I think he won't mind if I say this, that many of our commodity groups and farm organizations when they get into difficulty look to Dr. Patterson for advice and direction. So I have pleasure in presenting my colleagues to you.

The CHAIRMAN: As for yourself, Mr. Garner, you say you are the Chief Agricultural Officer. What does that position entail? What are your duties?

Mr. GARNER: I suppose in effect it is assistant to the Deputy Minister. It is a new title which is associated with the many duties that the assistant deputy ministers have with, probably, administrative duties. As for myself, my background is simply that I come from Bruce County originally. I served first as a Canada agricultural representative in several parts of the Province of Ontario and for several years was Director of Extension for the province, and I am now in my present capacity, Mr. Chairman.

The Deputy CHAIRMAN: We will now hear the brief that Mr. Garner is going to present, and if members have any questions I would ask that they be put following the presentation of the brief, and I would suggest that the same procedure be followed with regard to the others.

Mr. GARNER: Mr. Chairman, we have not attempted to make a formal presentation but I have jotted down a few notes that will probably take five or six minutes to read, in the hope that it might make some background for my associates to comment on. It would seem appropriate in discussing land use and the income of those engaged in agricultural production in Ontario, to comment briefly on: the area and trend in farm holding; farm incomes, and the productive capacity of those engaged in agriculture.

Area in farm land and size of farms: The area in farm lands in Ontario reached a peak in 1931 and has declined steadily since.

1931	22,840,898 acres
1941	22,387,891 acres
1951	20,880,054 acres
1956	19,879,646 acres

In other words, during that 25 year period, according to the figures supplied by the Dominion Bureau of Statistics, there has been a reduction of about 2 million acres of farm land in the Province of Ontario.

It should be noted that urban development has absorbed only a relatively small portion of the decrease in farm lands. The total assessed acreage of all towns and cities in the Province of Ontario in 1956 was 547,643 acres.

During this same period, namely, 1931 to 1956, there has been a significant change in the number of occupied farms. The figures follow:

1931	192,174
1941	178,204
1951	149,920
1956	140,602

In other words, during that period there has been a drop of around 52,000 farms.

The average farm holding increased in size during the same period, as reflected in the following figures:

1931	118·9 acres
1941	126·6 acres
1951	139·2 acres
1956	141·1 acres

Farm incomes: The farm incomes on Ontario farms rose sharply during, and immediately after the war. Since 1951 the farmer has found it increasingly difficult to make the necessary adjustments to meet the drastically changing economic conditions. The net farm incomes dropped more than 30 per cent between the years 1951 and 1955. The following table will show the trend.

NET INCOME OF FARM OPERATIONS IN ONTARIO

(Dominion Bureau of Statistics)

1951	$558,200,000
1952	429,700,000
1953	435,700,000
1954	396,600,000
1955	428,400,000

or roughly, as I intimated, a 30 per cent reduction in net farm income.

A study, "Farm Tenure in Ontario 1900-1950", undertaken by the Farm Economics Branch of the Ontario Department of Agriculture revealed that 47 per cent of all farm operators had attained their present status within the preceding ten years. This being the case, the majority of farm operators of today are confronted not only by reduced farm incomes but the additional problem of the necessity of increased capital investment. The 1951 census cites the following figures in respect to "Farm Values":

	1941	1951
Total Value	$1,189,600,261.	$2,547,969,618.
Land and Buildings	836,147,700.	1,419,363,802.
Implements and Machinery ..	150,358,900.	445,277,532.

You will note that the capital investment in implements and machinery nearly tripled to $445 million. I simply suggest these figures because a young man commencing farming not only has to make a larger capital investment in his farm but also in the equipment necessary to operate.

A comment or two in respect to the volume of production and the farm labour force: The labour section of the Dominion Bureau of Statistics estimated that the total number of adults working in agriculture in Ontario had decreased from 353,000 in August 1946 to 277,000 in August 1955. During this period, agricultural workers, including farm operators, dropped from 21 per cent of the total labour force to 13 per cent—figures given in "The Labour Force", Dominion Bureau of Statistics. This decrease in the labour force in agriculture included many former farm operators. It is significant that during this same period a substantial increase in physical volume of production was taking place on Ontario farms. Total physical volume is up about 29 per cent and production per worker is up 75 per cent, as compared to prewar.

Possibly the observation may be made at this point that land use has not substantially changed from that of twenty-five years ago. Equipment and work methods, on the other hand, have undergone tremendous changes. Over one-half of rotation crop land remains in grass and legumes. There has been a sizeable increase in the acreage of soybeans, 215,000 acres; in grain corn, 500,000 acres; and tobacco, approximately 130,000 acres, the latter becoming increasingly important as a revenue producing crop, but the acreage involved is not large when compared with total acreages of farm land, and this is the point I would like to leave here.

The majority of farm operators have sought to adjust to the changing economic situation by doing something about the farm unit itself,—and I think I have suggested that in the foregoing figures,—or by changing or improving their farm methods. At no time in the history of Ontario agriculture has the farmer been more eager to obtain the best information that is available on soil fertility practices, the latest information in respect to improved strains of grasses and clovers, varieties of grain and, in particular, is he seeking advice on the various factors which make for good farm management.

I would like to give you an illustration concerning one group trying to do something about it. The Ontario Soil and Crop Improvement Association, with its fifty-five branches, one in every county in old Ontario and one or more in every district of northern Ontario, plays an important role in introducing new varieties and improved practices. Nearly one thousand farmers serve as officers of their respective branches and each year one thousand to fifteen hundred field demonstrations are held or laid down.

Practically all branch associations have one or more field meetings during the growing season, and one or more educational days during the winter months.

The various demonstrations, over a period of years, have played an important part in introducing improved varieties and good soil and farm management practices. It is, we believe, a very good illustration of the findings of research workers being put to work by practising farmers.

In submitting these comments, Mr. Chairman, we have not done so with the idea of making a formal presentation, but rather with the thought of presenting some general observations or background material that might be helpful to your committee in examining the witnesses from Ontario, and which might open up a discussion in these particular fields.

The DEPUTY CHAIRMAN: Perhaps it might be well for us now to go on and hear Dr. Richards and Dr. Patterson before we open the meeting for questions, because these presentations interlock.

Mr. GARNER: Mr. Chairman, I might say that Professor Richards has a land use map here which sort of summarizes the work of the soil survey, and he is also in a position to comment about the departmental services. If that is agreeable to you, Mr. Chairman.

The DEPUTY CHAIRMAN: That will be fine. And I want to thank you, Mr. Garner, on behalf of myself and the committee members for your very informative presentation.

N. R. Richards, B.S.A., M.S. Professor and Head of Department of Soils, Ontario Agricultural College.

The DEPUTY CHAIRMAN: We will now hear from you, Dr. Richards.

Dr. RICHARDS: Mr. Chairman and honourable senators, I believe that Dr. Leahey of the Central Experimental Farm has already appeared as a witness before this committee and has given you his statements concerning soil survey work in Canada. It is my purpose this afternoon to review the survey work that in Canada. It is my purpose this afternoon to review the survey work that has been carried out in Ontario and to indicate the use and interpretation that is being made of this information in the organization of our soils research and advisory service programs. The soil survey work has been carried on over a period of more than 30 years. Since 1935 it has been a co-operative project between the Canada and Ontario Departments of Agriculture and has been centred at the Department of Soils, Ontario Agricultural College, Guelph.

Most of the soil survey work in Ontario has been carried on in that portion of the province that lies south of the French River, Lake Nipissing and the Mattawa River. Part of the district of Temiskaming has been surveyed and some work has been done in the districts of Cochrane north and Cochrane south and in parts of northwestern Ontario. To date we have soil survey information for more than 27 million acres in the province. The total area which I refer to as southern Ontario for purposes of discussion, contains about 31 million acres. Within this area we do not have any soil survey information for the districts of Nipissing, Haliburton and Muskoka. This map before you covers an area of about one million acres. This is a generalized soil map for the province. It is in the process of being prepared, summarizing the soil survey information that we have accumulated thus far.

The wide soil differences are indicated by the many different colours that appear on the map. With such variable soil condition it follows that our research work must be so planned that we attempt to develop the best known system of use and management for these different soils that occur in Ontario.

From the survey information a land use hazard map has been prepared. (*Document tabled*). In this grouping of soils we have attempted to recognize the natural features of the land that restrict use and on the map we show the distribution of lands that have certain major limitations for agricultural use. Briefly the main land use hazards, as we see them in Ontario at the present time, are:

(1) Drainage: About 12 per cent, or four million acres, excluding the shield area of the soils in southern Ontario are poorly drained. It has been estimated that about 25 per cent, or one million acres, has been tile-drained in the last 50 years. In the southwestern Ontario counties of Essex and Kent, much of the land has been tile-drained and now supports an intensive highly mechanized cash crop agriculture. In eastern Ontario similarly poorly drained lands occur, but have not been tile-drained as extensively.

In addition to the four million acres of poorly drained soils, another four million acres with a lesser drainage problem and to which we refer as "imperfectly drained" soils occur. Now, production per acre and variety of adapted crops can be increased appreciably on these lands by the use of improved drainage. The Department of Agricultural Engineering at the Ontario Agricultural College have estimated that about one million acres of these imperfectly drained soils have had some drainage improvement. The estimates are based on drainage surveys that have been conducted through the advisory service of the Department of Agriculture, and also based on the amount of money loaned under the Tile Drainage Act, as well as the amount of work done by farmers for which there was no survey by the engineering field men or no application for a loan under the Tile Drainage Act. It has been estimated that the cost of improving drainage on the poorly drained soils, on a systematic basis, would run between $85 to $90 per acre for four-inch tiles spaced at four rod intervals. On these imperfectly drained soils, four million acres, to which I have referred, where a systematic tile drainage scheme is not required, where it is just a matter of running lines in to improve the drainage of low areas, the estimated cost of improvement there would run from $25 to $30 per acre. The Department of Agriculture has prepared an estimate of the cost of improving the remainder of the poorly and imperfectly drained areas in the province. The cost of that would be about $200 million. So we estimate that there are four million acres of poorly drained land, four million acres imperfectly drained, and one million acres of impervious subsoil, imperfectly drained.

(2) Hilly topography: About a million acres of land in southern Ontario have very hilly topography that restricts the use of agricultural machinery. When cultivated these soils are very susceptible to erosion. Many of these soils are coarse-textured and have a very low moisture holding capacity. Many of these soils, indicated by area No. 4, are not suitable for modern agricultural machinery, as we know it, and it is highly doubtful if some of these areas should have ever been cleared of their tree cover and attempted to be used for agricultural purposes.

(3) Low moisture holding capacity and low fertility: The next area which I would draw your attention to is area number 5, coloured yellow, ranging along Lake Erie's shore, Georgian Bay, and again in eastern Ontario. Over three million acres of the land we have surveyed have low moisture holding capacity and either low natural fertility or the fertility is rapidly depleted under cultivation. With adequate fertilization and care in the maintenance of soil organic matter content these soils can be productive. They are early soils and include a large area in Norfolk county where some of the highest valued land in Ontario is now located following the introduction of tobacco cultivation. These sandy soils, through the use of irrigation and fertilization, can make a major contribution to agricultural production in Ontario.

(4) Water erosion: In area No. 6. coloured dark brown on the map, we find some of the most versatile, most productive, most reliable soils we have in the province of Ontario. About 6 million acres of these soils in southern Ontario are susceptible to water erosion. There are less than 1 million acres in southern Ontario severely eroded. Since our most durable, productive and versatile soils are susceptible to erosion we must be constantly on our guard to reduce this hazard to a minimum. The erosion hazard can be reduced to a minimum through good crop rotations and sound soil management practices and, where necessary, simple erosion control practices.

An important development in our research program in recent years has been the establishment of a hydrologic station at the Ontario Agricultural College in 1951. This station, which includes an erosion experiment station, is situated on a type of soil which is typical of several million acres of soil in southern Ontario. The projects being studied include:

1. Measurement of soil and water losses under different cropping system.

2. The collection and analysis of weather data with particular reference to the amount and intensity of rainfall as related to soil erosion.

3. Investigation of need for irrigation on certain crops.

Similar studies are also being conducted by the Canadian Experimental Farm at Ottawa.

The results have indicated that soil and water losses from three corn plots under different cultural practices on a 7 per cent slope show (a) continuous cropping with corn contributed to heavy soil losses, (b) that when corn followed the hay crop, erosion was not serious and (c) alternating strips of corn and hay was effective erosion control measure.

Now I would say that a 7 per cent slope is not a very steep slope. For a period from April to June, from corn planted up and down the slope, that is up and down the hill, as compared to corn planted across the slope with a 70-foot strip of corn alternating with 70-foot strips of hay, the practice that we refer to as strip cropping, the loss of soil—and that is over the period 1953 to 1956—from a plot planted up and down the slope was more than 14,000 pounds per acre, and from the plot where the corn was planted across the slope and alternated with strips of hay, the loss was 100 pounds per acre. The 14,000 pound loss, I must point out, was from a plot where we had continuous planting of corn, that is corn after corn after corn for a four-year period.

Now, when this was compared with a plot that was planted with corn up and down the slope, we found the soil loss was reduced from 14,000 pounds to 2,300 pounds per acre. This clearly illustrates, first, the effectiveness of strip cropping, or alternating strips of corn and hay, as an effective erosion control measure, and also points out the importance of forage cropping or hay crops in our soil management practices. I might also point out that a single storm on May 11, 1956, where 1.2 inches of rain fell, the result of that was a loss of 9,740 pounds of soil from the corn planted up and down the slope while there was only a trace of loss from the strip crop area. And no loss from the plots in grass or the plots located in woodlots.

Senator HORNER: How long would land remain fertile after the heavy erosion you just described?

Dr. RICHARDS: With a continuous loss of the surface soil depletion of soil fertility would be accomplished.

Senator HORNER: You would lose your best soil?

Dr. RICHARDS: That is right; in that process we are losing our best soil.

(5) Stoniness: The next area on the map is area No. 7, an area where because of topography there is an erosion problem as well as a stoniness problem associated with it. We estimate that there about a million acres on which stones must be removed before being cultivated. In addition to the stoniness hazard, these soils are also susceptible to erosion. Approximately 300,000 acres are too stoney to be cultivated and other areas are being retired from general grops because of the stoniness hazard to modern machinery such as combines.

(6) Shallowness over bedrock: Then this area coloured dark brown, area No. 8, contains he soils where there is less than three feet of soil before striking the rock, that is, there is less than three feet of soil suitable for growing agricultural grops. Often these soils are excessively stoney. A large portion of this land is being used as range lands for pasture purposes.

(7) Rock outcrop: The large area on this map, area No. 10, coloured pink, is land that we refer to as the pre-Cambrian area, and there igneous rock outcrop is the dominant feature. That rock outcrop certainly presents a physical hazard to cultivation, particularly with mordern machinery. A large proportion of these areas is being used for forestry purposes at the present time. It is in this area that we find some of the most desirable recreational areas, a use that is indeed important in planning a total land use program for the province.

(8) Research: The research program on soils and land use in Ontario is designed to provide a fuller understanding of the soil resources of the province. Recognizing the variability of soils and climate in Ontario, research stations have been established by the Ontario Department of Agriculture at Guelph, Cayuga, New Liskeard, Brampton, Hespeler, and Bradford, and by the Canada Department of Agriculture at Harrow, Woodslee, Delhi, Smithfield, and Kapuskasing. The results of experiments at these stations are incorporated into the recommendations of the advisory services offered to Ontario farmers.

The Ontario Department of Agriculture maintains a soil-testing service in laboratories located at Guelph, Ridgetown, Vineland, and Kemptville. The purchase of fertilizers being one of the largest single recurring items of costs in a crop production program, this service is of great value in assisting farmers in the purchasing of the right kind and amount of fertilizer. The soil test is also used as the basis for making lime recommendations for Ontario conditions.

Valuable assistance is also available on problems of drainage, and in 1955 some 13,141 acres on 412 farms were surveyed and serviced by the agricultural engineering field men working out of Guelph as their headquarters. Assistance is also available for the construction of farm ponds and for design of irrigation equipment.

In 1946 a land use planning service was offered to Ontario farmers. The Committee will recall Dr. Leahey's remarks where he suggested that by the soil survey we were attempting to establish an inventory of soil resources in Canada, and that is what is portrayed on this map for Ontario, information that we now have for a large part of southern Ontario—an inventory of the resources of land. Some years ago it was felt that we must have a detailed inventory of the soil resources of a particular parcel of land a farmer was working and so it was that in 1946 we offered in Ontario this land use planning service to Ontario farmers. It is true that for many years prior to that time we had a soil advisory service available which concerned itself with such things as soil testing, making lime recommendations, as well as fertilizer recommendations, but the land use planning service was set

up to include all that the previous soil advisory service had offered, and it has been expanded to include advice on erosion control, systems of soil management and the development of a balanced land use for the individual farm. This service is really working out to be a system of soil management and crop production in consultation with the farmer, so that every acre of land can be farmed to the best profitable advantage in keeping with the quality of the land on that farm. I am exhibiting to you an example of the type of thing we are prepared to offer in this land use planning service. This is a detail soil map of an individual farm. (*Document tabled*) From this soil map we develop a soil management and crop management program for this farm, incorporating the services that are available in the Department of Agriculture. We have worked in this way on more than 700 farms, and the recommended changes that have been made revolve around measures that do not require much of a capital investment to implement. They are based, by and large, on improved crop rotations, improved fertility recommendations and improved drainage. Attention is also paid to grassed waterways and strip cropping for water managements on fields.

An important observation that has been made is that a relatively small number of complicated or extreme conservation practices were considered necessary for Ontario conditions. Only 12 farms out of the 700 required terraces, and gully and stream bank control were recommended for only 29. It was felt that reforestation should be practised on 152 of the 700 farms to take care of a particular quality of land or to use land to the best advantage.

Our observations from the 700 farms which have been planned are:

1. Proposed changes do not require a large outlay of capital.

2. The majority of changes are based on sound cropping and fertility practices for which advisory services are available.

3. Fertility and drainage improvement and erosion control are the main land use hazards.

4. Extreme or complicated conservation practices are required on only a small number of farms.

5. Reforestation has been included as a part of the land use program on about one-quarter of the farms.

6. The information obtained from the 700 farms provides a means to evaluate currently recommended practices for Ontario conditions.

Now, what can we expect from a land use plan? There can be little doubt that profitable agricultural production on a sustained basis requires good soil management. Good soil management in turn requires the latest information on fertilizer use, tillage, crop rotations, crop varieties, and so forth. Two years ago the Department of Agricultural Economics made a study of 46 farms which were planned by the Department of Soils between 1946 and 1952. What did this study show? Well, first, the amount of feed produced on the farm was increased to feed extra units of livestock. The major increase, however, was in hay and pasture, crops that require fewer work units than most other crops; secondly, hay and pasture crops are basic to a sound soil management program; thirdly, total farm receipts increased during the six year period; fourthly, net income increased by $500 on planned farms while net income from all farms during the period decreased by $1,300; fifthly, capital investment required to introduce the land use plan was very small—the greatest capital investment was for increased livestock to utilize the increased crop production.

What of the future? Well, experience has shown that the land use planning service is sound and can be used to profitable advantage on Ontario farms. With the factual information at our disposal concerning Ontario soils, control practices have been worked out to take care of the major land use problems.

There can be no doubt that Ontario soils can be used on a continuing basis and not exhausted. Practices must be employed in keeping with the quality of soil resources. Ontario farmers can be encouraged to use this service as a sound basis for their crop production program. It cannot be other than basically sound because it takes into consideration, (a) the quality of the land, (b) the management and cropping practices best suited for the soil-climatic environment and (c) the best information available to remove guess work from the kind and amount of fertilizer to use on the individual farm.

The DEPUTY CHAIRMAN: Thank you, Dr. Richards, for your very informative and interesting talk. We shall for the moment abstain from asking you questions until we have heard from our third guest, Dr. Patterson.

H. L. Patterson, Ph.D., Director, Farm Economics Branch, Ontario Department of Agriculture.

Dr. PATTERSON: Mr. Chairman and members of the Senate Land Use Committee, our views of the problem before you deal more particularly with what can be done to put the farm operator in the position where he can follow good farm use practices, and how he can, if possible, get his income up to a point where he will enjoy staying on the farm.

In his presentation Mr. Garner gave you some figures of the decrease in area of occupied farm lands in Ontario. To further illustrate that problem I have here a small map which, as you will see, is coloured in various shades of red. (*Document tabled*). This map indicates the percentage of decrease in acreage of occupied farm lands between the years 1941 and 1951 in individual townships in Ontario. The townships coloured a dark red are townships in which over 15 per cent of the occupied farm land dropped out of agriculture between 1941 and 1951. The red hatched townships represent those in which 7 per cent to 15 per cent of occupied farm lands in that township ceased to be used for agriculture. You will notice that it is not nearness to cities that brings about the decrease in the acreage of farm land used for agriculture; other factors enter into that picture. You will notice a similiarity between what is shown on the soil map exhibited by Dr. Richards and this smaller map showing percentages of decrease of land used for agriculture by townships.

There are problems of land use even in the better soil areas, and one of them is that of getting at what is a satisfactory farm unit. For example, what size unit will afford a man an opportunity to meet his expenses, that will give him a chance to meet his debts? In a farm title transfer survey that we made we found that 68 per cent of farm lands in Ontario were burdened with mortgages at the time of transfer from one owner to another, and that is in addition to any unregistered debts such as an account at the store, with the feed dealer, the oil house, or a personal loan, and so on. In that survey, which covered the years between 1900 and 1950, we found that on the average farms changed hands every 21 years. In fact they have been changing hands oftener than that since the end of the war, although during the war there was a lag.

This farm income problem is certainly very much in this picture of land use. We have been working with quite a number of farm operators in Ontario, assisting them in some cases by handling their farm records and obtaining from them all the information they can give us as to what makes a good farm unit. Thirteen hundred farms on dairy herd improvement receive a cost statement back from us every year which draws attention to the strong, average and weak points in their whole farm organization. This cooperation is a measure of the interest which our farmers are showing. Most of these dairy herd improvement associations at the present time have lists of applicants waiting to become members when some regular member drops out. From this mass of

information which we have been able to acquire we have learned some very definite things about what makes for a good farm unit and what does not. I might say that we very seldom study any group of a hundred farms where we will not find at least a $7,000 difference in the earnings of these farms as between the high and the low.

Senator CRERAR: Would that be on comparable land?

Dr. PATTERSON: On comparable land and in the same market zone. Most of our studies have been done on one type of enterprise or one particular type of farm where shipments are made to the same market and the farms have a lot in common. For instance, we might study only processed milk shippers where the prices each receives would be comparable and where nearly all the conditions were equal.

Senator BARBOUR: With the same acreage?

Dr. PATTERSON: In many cases, yes. Usually the high and the low incomes are found on the big acreage farms, where the loss or the gain will be multiplied by their size. Small farms of course cannot have very big gains or very big losses.

Senator CRERAR: What is the explanation of that?

Dr. PATTERSON: I would say that we find we can pretty nearly forecast what the income will be if we know the farmer's yield per acre, his production per animal, if we know what his feedig methods are, and feeding is rather important, for we find that inefficiency in feeding can put a man in the red no matter what else he is doing. Even some of our top producing herds last year were losing money because they had a feed loss out of all proportion to the return they received.

Senator CRERAR: Would it be fair to say that one farmer was efficient and the other one was not?

Dr. PATTERSON: Senator Crerar, you usually do not find a farm that is all good or all bad. There are usually weak places in a farm organization even thought it is rated good in some factors. For example, out of 600 whole milk farms only 30 were rated low in all factors. The majority have some weak places in their setup; they have some good points too.

In our farm management program we feel that the thing we have to do is to find these weak spots and then proceed to work on the factors which are rated weak. In that way the weak factors can be brought up to average very easily. For instance, our dairy herd improvement farms vary in milk production all the way from less than 7,000 up to over 14,000 pounds per cow, that is, taking the average of an entire herd. Individual cows will vary much more than that. If a farmer has a low producing herd he can bring it up to average very easily, that is, he can easily buy cows to bring production up to the average level, but if a farmer already has a high producing herd the problem there, to increase production, is to get cows that are still better, and to do that you have to do a lot of searching. I just mention this as an illustration of the way an operator can bring his weak factors up to an average, or over average basis. So, as I said, the thing to do is to find where those weak spots are and secondly, start to work on them first.

Now, a description of the methods we have been using might be of interest to you. To handle this work we have had to develop mass methods because questions are coming into us in such numbers that we cannot deal with them on an individual basis.

We work with all other branches of the department in many cases. Requests received for a soil plan sometimes follow from a soil analysis of ours which indicates the crops are not making the best use of the soil, and so we turn that problem over to the soil department at the college to work on.

Almost all requests for information come to the agricultural representative first, and we are doing quite a lot of extension work with them. What we are primarily trying to do is to help farm operators keep their records. If they have good records then we are in a position to know what they are doing. I show you here a form which we have developed. It is what we call a short form "Farm Business Analysis." This form is the basis of our farm business extension. In this form we show standards that we have worked out, and by its use farm operators can determine their own performance in each of these factors and thus arrive at a comparison with a standard which we have determined is necessary to earn a good farm income. On this form we have set down standards in each factor which we consider essential. This form, as well as the accompanying sheets on farm management principles are very interesting, and if an operator has his records in such shape that he can fill in this form we can rate his organization as weak, average or strong. For example, let us consider capital use. Many people think, offhand, that if you invest money in a farm there is not much more you can do about it, but the important thing is to see that that money is invested in something that is going to bring a return. For instance, if an operator has his money invested in an expensive barn which is used to only half its capacity, he is in a pretty bad spot. He has a lot of money tied up in buildings and not enough invested in livestock, an investment that could be returning him a real income. Of course, for our young farmers there are other considerations. It takes a lot of money to finance a modern farm operation. We find that the older farmers have a liking for cattle and tend to drift into that enterprise, but in the case of a young man starting out, if he wants to have twenty good dairy cows it will cost him from $5,000 to $6,000, and that is a lot of money to dig up when you are just starting. But there are ways of keeping that investment down. For instance, he can go into hog producing very readily. If you have six brood sows you are in business in six months. Poultry production can be developed on the same basis.

In our method of approach, therefore, we have set up these standards, and I might now for a moment explain how we arrived at them. We made a series of farm management cost studies to obtain the input and output data we needed. For instance, we obtained information on the time requirement, the amount of fertilizer used, the yield per acre, and from this and other information we were able to set the standards achieved by the successful operator. From these enterprise standards we can set up this combination of standards which an operator should reach if he is going to run a successful farm unit. This Farm Business Analysis form contains a summary page on which is shown standard production levels covering crop yields, labour use, capital use, livestock yields which an operator must meet if he is to have a successful operation. After we have analysed the information submitted by the farmer on this form we advise the farmer as to how he rates in the different branches, whether any particular part of his organization is weak, average or strong. This past winter 2,200 farms were keeping these detailed records of one kind or another. After receiving our ratings the farmer can approach the agricultural representative or other specialists to find out what can be done about the weak spots in his organization.

In addition to all that we have established a number of short courses at the request of the farm people, at which we show them how to analyse their own business and inform them as to what the more successful farmers are doing in regard to these factors. This past winter we ran twenty-four short courses in Ontario, each on a three-day basis. Another sixteen have been operating on a one to two-day basis.

The DEPUTY CHAIRMAN: What could be the average attendance at these courses?

Dr. PATTERSON: We usually ask the agricultural representative in charge to limit the group to about 30. We do not advertise these meetings; no information about them goes out over the radio or press because if we did the meetings would be swamped. In one case we thought we did not advertise but evidently word got around, and as a result we had 85 people come to a course at Woodstock. To get farmers to grasp the fullest implications of this approach to farm management we have to have a discussion-group type of approach, because in this you are getting right into their business problems and you cannot have a large group when you are doing that. We have been averaging about 25 to 26, and we ask them not to go over 30 as a rule.

In addition to our short courses we have our dairy herd improvement associations. There are now 59 associations in the province of Ontario. One supervisor looks after each association. His job is to get to each farm once during the month, to get production weights and tests from each cow and at the same time he records all the costs that have gone into that herd for the month. We then make an analysis by associations and a statement goes back to them showing what the best income farms have done, and what the poorest have done, and by that they can see where they fit in the range. We give a rating of weak, average, and strong in each of these reports. Those reports are followed up by a county meeting at which we explain them and at these there is usually a fairly good attendance. In some cases the meeting may be open to the public and we might have 80 or 90 people present.

Another method of making use of this information is through farm management associations. There are 35 in the province now. They are usually organized on a county-wide basis although in some counties such as Huron we have two, one north, and one south. They meet regularly during the winter to discuss problems of farm management, and use what information we can supply them with, depending on their type of enterprise and the general markets they are catering to. These associations are meeting regularly, and they are growing.

Mr. Chairman, that is a very general picture of our activities in farm business management. I think it may be better now to leave it to questions to bring out further information.

The DEPUTY CHAIRMAN: Thank you very much, Dr. Patterson.

Now, Mrs. Inman and gentlemen, the meeting is yours to ask these three gentlemen any questions you may desire.

Senator BARBOUR: Mr. Chairman, I would like to ask if grass is one of the most important crops in Ontario?

Dr. PATTERSON: Yes. Leaving pasture out of it for the moment, about 46 per cent of all cultivated land in Ontario is in hay. When you add pasture, nearly 70 per cent of the land in Ontario is forage.

Senator MCGRAND: I have one or two questions I should like to ask Mr. Garner. It has been stated that there are fewer farmers actually operating farms today than there were a few years ago. However, apparently farm income is lower today than it was when more men were employed in the industry. I would like to hear some comment on this, and I would also like to know what study has been made in regard to delinquent municipal taxes in connection with the study that has been made with respect to farm incomes.

Mr. GARNER: I might say that the productive capacity is up 75 per cent, according to our survey.

Senator MCGRAND: The capacity may be up but the income farmers get is lower than before.

Mr. GARNER: We are speaking of net farm income. The capital investment and the labour charge to a farmer's operation has gone up two or three times.

Dr. PATTERSON: I think there is a little misunderstanding here. It has been pointed out that from 1931 to the present time there has been a terrific drop in the number of farms in Ontario. The drop in income has been since 1951 only.

Mr. GARNER: 1951 represented the peak year.

Dr. PATTERSON: Yes. The income was going up until 1951, and it has dropped since that time. There are fewer farmers today than there were in 1951. It has been estimated by the Department of Labour that the number of people working in agriculture, including operators, has been going down on an average of about 1,000 per month, since the end of the war. That is a rough figure.

Senator GOLDING: The production has not been decreasing.

Dr. PATTERSON: The production went up from the pre-war level to 1951 by 28 per cent. However, since 1951 it has fallen off.

Senator GOLDING: The introduction of mechanized farming has resulted in larger farms. Is that right?

Dr. PATTERSON: Yes. They can work more land. But there is more to it than that. The increased output per man gives the farmer a better chance of maintaining an income comparable to that of other industries. The income in other industries has been increasing and if that of agriculture stayed still, it would be difficult for the farmers to maintain any sort of comparable income.

Mr. GARNER: I believe there was another question asked by Senator McGrand, but I do not believe we have the information he requires.

Dr. PATTERSON: That information is contained in the municipal reports which are made to the Minister of Municipal Affairs in our province each year.

Senator LEGER: A little while ago Mr. Garner made the statement that there has been a decrease in the number of farms from 350,000 to 277,000. This means that there are 73,000 fewer farms today.

Mr. GARNER: That is with respect to occupied farms.

Senator LEGER: Does this mean that some of the farms have been united to make bigger farms?

Mr. GARNER: That is correct.

Dr. PATTERSON: It is also true that some farms have disappeared altogether. The areas marked in deep red on this map indicate that 15 per cent of the farms have disappeared entirely.

Senator LEGER: What has happened?

Dr. PATTERSON: In most cases they were simply abandoned and went over to forest growth.

The DEPUTY CHAIRMAN: When one travels on the train from Montreal to Toronto one sees many large stretches of land with uncut grass. Are these areas too small to be used for operating units?

Mr. GARNER: That is true to some extent but in most cases it is simply that the property owners are busy working in industry. They have simply left the land and have not got around to cutting the grass. Many of these farms belong to people who are employed in industry at such places as Brockville and Kingston.

The DEPUTY CHAIRMAN: What do you consider to be a worthwhile unit for farming with machinery today? I suppose it depends on the crops produced.

Mr. GARNER: I would ask Dr. Patterson to answer that question.

Dr. PATTERSON: You can only lay down rough general rules with respect to this. That is what we have gathered from our farm records. Our method of calculation is based on man-work units. According to this basis we have found that a farm is not likely to remain operated as such if it is not worked by at least a two-man unit. The danger with a one-man unit is that sooner or later the man becomes ill and the unit goes out of operation. We find that you are not likely to have a good unit with less than 450 man-work units. There is another rough rule of the thumb. Unless you have about $5,000 in gross sales per worker, you do not stand a chance to come up with a living for a family. Another way of getting at it is that you need approximately 100 acres as a minimum for a farm where you are producing whole milk. If it is a beef raising farm you need a minimum of approximately 200 acres.

Senator LEGER: What is the average acreage?

Dr. PATTERSON: 141 acres.

Mr. GARNER: That is according to last year's census.

Senator MCGRAND: That is land under cultivation?

Dr. PATTERSON: No, the total land on the farms.

Senator GOLDING: Have you any idea how much of this land throughout the province has been growing up in thorn trees? You see quite a bit of this.

Dr. PATTERSON: There is a lot of it, yes, but I do not know how you could measure the acreage, if that is what you are inquiring about.

Senator GOLDING: But there is a lot of it?

Dr. PATTERSON: Yes. A lot of it is good land.

Senator GOLDING: I was wondering if you had any program, the purpose of which is to discourage this kind of thing?

Mr. GARNER: Methods are being developed for removing the thorns, and I think these methods will prove to be economic. We demonstrated such a method at six of our demonstration farms where thorn trees were growing. The method of removing thorns and doing some reseeding in fertilizer has paid on a five-year period where the soil has been basically good.

Senator GOLDING: You mentioned something about the number of agricultural representatives you have. You have one in pretty nearly every county now, have you?

Mr. GARNER: Yes, we have one in every county. There are 55 in the province of Ontario. We also have 14 associate vets and 13 assistants throughout the different counties. In addition to that there are 11 men attached to the agricultural engineering extension service, who deal with drainage questions, and so on. We also have 11 fruit and vegetable specialists in the extension service.

Senator GOLDING: I think having these men throughout the counties to help the farmers is one of the best investments that could be made.

The DEPUTY CHAIRMAN: I would support that, Senator Golding.

Senator GOLDING: They have assisted the farmers immeasurably, especially those who are not too conversant with farming.

The DEPUTY CHAIRMAN: These extension men are required to have so many good qualities that it is difficult to find them. They are certainly rendering a great service to the farmers of Ontario and other provinces.

Senator GOLDING: They are anxious to do all they can. They are good workers.

The DEPUTY CHAIRMAN: I was wondering about farm equipment. You have to employ expensive farm equipment for a sufficient number of hours or days in order to justify the expense of buying it. Have you any figures on that?

Mr. GARNER: Yes. We have been doing quite a bit of analysis from farm account books. We did find in our mixed farming area, where livestock was kept, that we got the optimum of net return on machinery of about 60 per cent per acre on tillable land.

Senator LEGER: Do you assist the farmer financially?

Mr. GARNER: Yes, up to $3,000. That is approved by the Municipal Board. A farmer could obtain a loan, subject to the approval of the man who owns the mortgage, if there is one, up to $3,000.

Senator WALL: I came in here rather late, but I am intrigued by this subject. This is a service provided by the Department of Agriculture?

Dr. RICHARDS: That is right, sir. The farmer wishing the service applies through the agricultural representative in his county to the department of soils for the land use planting service.

The DEPUTY CHAIRMAN: I do not think you were here, Senator Wall, when Dr. Richards delivered his address?

Senator WALL: No, I was not.

The DEPUTY CHAIRMAN: He is the head of the Department of Soils.

Senator WALL: Supposing I were the farmer you speak of, would I pay for this service?

Dr. RICHARDS: No, there is no charge for the service.

Senator WALL: What would happen if all the farmers availed themselves of this service?

Dr. RICHARDS: I feel that you have the most effective use of the amount of land resources we have.

Senator WALL: I accept that. Can you give an approximation of the cost of this service per land unit?

Dr. RICHARDS: I cannot give you the cost on an acre basis because it varies depending on the soil that we find on the farm; that is, the amount of time it takes to develop the plan. I can answer it this way, that we do about 150 farms a year with the staff that we have, and that is a staff of five, three of them on full time and two of them on part time.

Senator GOLDING: Have you been carrying on that plan to produce more grass, and that sort of thing?

Dr. PATTERSON: There are many plans for that. Of course, there are the crop improvement associations, and the deep pasture plan set up on a demonstration basis throughout the province, and of course research work is being done.

Senator GOLDING: On pasture, for instance, which you have fertilized or treated in order to increase production, have you any records, for example, on your increase in beef production, if there were cattle on the pasture?

Dr. PATTERSON: We do have demonstration pastures for beef. In a fertilized area we had a production of approximately two and a quarter times of beef produced as against broken and re-seeded pasture.

Senator HAWKINS: What about per ton production on your approved lands, and your average beef production per acre from grass land?

Dr. PATTERSON: Four and a half acres for a steer.

Mr. GARNER: Under the demonstration plan we have one steer per acre, or one to two acres, the situation varies. The demonstrations in eastern Ontario here were relatively good, for on those farms moisture is plentiful and fertilization pretty adequate, and those farms have carried slightly better than one steer to the acre.

Senator BARBOUR: Have you got figures on the number of pounds a steer would put on in five months, or six months, say?

Senator HAWKINS: Per acre; that is what I was really asking.

Dr. PATTERSON: On the Lanark farm they were running about 400 pounds.

The DEPUTY CHAIRMAN: What proportion of your soils requires limestone application to get full production?

Dr. RICHARDS: Actually, there is a relatively small proportion of the soils in southern Ontario, as we see it, that requires limestone, because the majority of our soils were born from limestone rock. Now, the areas in which lime is needed, are in the Niagara Peninsula, or where they have sandy soils in eastern Ontario, say from Brockville to the east, we will use limestone to the extent of about 40,000 tons a year, which is not really as much as we should be using on those soils that use it.

The DEPUTY CHAIRMAN: What do you put on per acre?

Dr. RICHARDS: That depends on the type of soil.

The DEPUTY CHAIRMAN: The acidity of the soil?

Dr. RICHARDS: The acidity of the soil. A clay soil requires more to correct the acid condition than a sandy soil. I would assume that about a quarter of the soils in southern Ontario, a quarter of this surveyed area to which I referred, requires lime.

The DEPUTY CHAIRMAN: Are there any more questions? I should like to find out a great deal, if I can, about the junior credit scheme you have. I understand you have a plan by which you loan money to young farmers. We are anxious to know how to keep more of our young farmers on the farms.

Mr. GARNER: Mr Chairman I do not know whether I can give you complete details, because that matter is outside my particular department. The loans are set up under the Junior Farmers Establishment Board, which is responsible to the Treasury department, and which has recently been transferred to Agriculture. They have operated a little over three years and the loans to date have amounted to $14,051,000. I may say we have had total applications of 3,675, of which 2,067, were granted loans.

May I say a word about who is eligible for loans. It is open only to junior farmers between the ages of 21 and 35 years, with three successful farm experience in Ontario. The applicants are not required to have their citizenship, but they must have three years farm experience.

Up to the present time it has been permissible to grant a loan for 80 per cent of the value of the property and livestock, but since this is a rather risky business the applicants have been examined pretty carefully as to their eligibility as a moral risk. In the circumstances we have granted loans to approximately 63 per cent.

The Deputy CHAIRMAN: Of the appraised value?

Mr. GARNER: Yes.

Senator GOLDING: Your own men make the appraisals do they?

Mr. GARNER: Yes.

In view of the unfortunate situation agriculture is in today, we think it may be advisable to cut down the 80 per cent somewhat.

The DEPUTY CHAIRMAN: What is the cost to the province?

Mr. GARNER: The money is loaned out at 4 per cent. The operation has not been in effect very long, but the present cost of administration is about 1 per cent. That is an estimate, because the staff has been growing, and we do not have the latest figure. However, I know the province does not borrow money for 4 per cent; it would be more like 5 per cent.

Senator BARBOUR: I would like to ask if you feel you could handle the Federal Farm Loan Board's activities in connection with your own loan board to better advantage in the province of Ontario?

Mr. GARNER: I do not know that I should attempt to answer that question, but off hand I would say no.

The DEPUTY CHAIRMAN: Is there any overlapping?

Mr. GARNER: We are working in a certain field with young farmers. With 25-year loans, it is assumed that they will be repaid before they are 60 years of age, if they are succesful. The Canadian Farm Loan Board operates in a more general field. By way of personal observation, I would say that it would not be good business to mix the two.

Senator BARBOUR: I think we had one deputy minister here who felt that in his province they could handle them both.

Senator GOLDING: I think Mr. Garner is wise in his observation.

The DEPUTY CHAIRMAN: Are there any further questions? If not, may I say to Mr. Garner, Dr. Richards and Dr. Patterson, on behalf of the members of this committee, that we thank you most sincerely for the time you have taken to come here and give us this most informative and helpful presentation. It shall certainly receive our serious consideration. If we should require further information as our study proceeds, I hope we may feel free to call on you again.

Mr. GARNER: Thank you, Mr. Chairman. On behalf of my colleagues, may I say it has been a pleasure to be here. We appreciate your courtesy, and if we can be of help in any way we will be glad to do so.

Whereupon the committee adjourned.

1957

THE SENATE OF CANADA

PROCEEDINGS
OF THE
SPECIAL COMMITTEE ON

LAND USE IN CANADA

No. 7

THURSDAY, MARCH 28, 1957

The Honourable C. G. Power, Chairman

WITNESSES

Mr. J. S. McGowan, Director of Colonization and Agriculture, Canadian National Railways.

Mr. J. E. McCannel, Executive Secretary, Agricultural Institute of Canada.

REPORT OF THE COMMITTEE

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

87995—1

SPECIAL COMMITTEE ON LAND USE IN CANADA

The Honourable C. G. Power, Chairman

The Honourable Senators

Molson	Hawkins	Smith (*Kamloops*)
Barbour	Horner	Stambaugh
Basha	Inman	Taylor (*Norfolk*)
Boucher	Leger	Taylor (*Westmorland*)
Bois	Leonard	Tremblay
Bradette	McDonald	Turgeon
Cameron	McGrand	Vaillancourt
Crerar	Petten	Wall
Golding		

26 Members—Quorum: 7

ORDER OF REFERENCE

Extract from the Minutes of the Proceedings of the Senate

WEDNESDAY, January 30, 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, Golding, Hawkins, Horner, Inman, Leger, Leonard, McDonald, McGrand, Molson, Petten, Power, Smith (*Kamloops*), Stambaugh, Taylor (*Norfolk*), Taylor (*Westmorland*), Tremblay, Turgeon, Vaillancourt and Wall;

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.

REPORT OF THE COMMITTEE

THURSDAY, March 28, 1957.

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

1. In accordance with the order of reference of January 30, 1957, your Committee held nine meetings, at which twenty-seven 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 therefor recommends that the Committee be reconstituted at the next session of parliament to continue the inquiry.

All which is respectfully submitted.

CHARLES G. POWER,
Chairman.

87995—2

MINUTES OF PROCEEDINGS

THURSDAY, March 28, 1957.

Pursuant to adjournment and notice the Special Committee on Land Use in Canada met this day at 11.00 a.m.

Present: The honourable Senators McDonald, *Deputy Chairman,* Barbour, Basha, Boucher, Bois, Cameron, Golding, Hawkins, Inman, Leger, Leonard, McGrand, Molson, Stambaugh, Taylor (*Westmorland*), Turgeon, Vaillancourt and Wall—18.

In attendance: The official reporters of the Senate.

The following were heard:—

Mr. J. S. McGowan, Director of Colonization and Agriculture, Canadian National Railways.

Mr. J. E. McCannel, Executive Secretary, Agricultural Institute of Canada.

The following documents were tabled by Mr. McGowan:—

Summary of Legislation Relating to Soil and Water Conservation in Canada.

The Use and Conservation of Canada's Farm Lands.

It was Resolved that the Report, approved by the Committee on the 21st instant, be presented to the Senate by the Honourable Senator McDonald, on behalf of the Chairman.

Consideration of the order of reference of January 30, 1957, was concluded.

At 12.15 p.m. the Committee adjourned.

Attest.

JOHN A. HINDS
Assistant Chief Clerk of Committees

87995—2½

THE SENATE OF CANADA

SPECIAL COMMITTÉE ON LAND USE IN CANADA

EVIDENCE

OTTAWA, Thursday, March 28, 1957.

The Special Committee on Land Use in Canada met this day at 11 a.m.

Senator John A. McDonald in the Chair.

The Deputy CHAIRMAN: Honourable members of the Special Committee on Land Use, we are pleased to have with us today Mr. J. S. McGowan, Director of Colonization and Agriculture, Canadian National Railways, and Mr. J. E. McCannel, Executive Secretary of the Agricultural Institute of Canada. These gentlemen are here to speak on behalf of the Agricultural Institute of Canada, and we are most pleased to have them. I would call upon Mr. McGowan first.

Mr. J. S. McGowan, Director of Colonization and Agriculture, Canadian National Railways:

Mr. Chairman and honourable senators, I believe that my first responsibility is to read to you a letter from the President of the Agricultural Institute of Canada. This letter is addressed to Senator Charles G. Power, and reads as follows:

> The Agricultural Institute of Canada appreciates the courtesy extended by your Committee to appear before you today.
>
> We are represented by Mr. J. S. McGowan, Director, Department of Colonization and Agriculture, Canadian National Railways, Montreal, and our Executive Secretary, Mr. J. E. McCannel. Mr. McGowan, a past president of the Institute, has been for many years active on our Conservation Committees. You have heard already from a number of our members and no doubt you will be calling on others in the course of your work.
>
> This submission has been approved by the National Executive of the Institute and we are hopeful that it will provide a good basis for your investigations.

The letter is signed by W. A. Thomson, President of the Agricultural Institute of Canada.

My only regret is that Mr. Thomson is unable to be with us to make this statement on behalf of the Institute. With your permission I propose to follow the text as approved by the Executive of the Institute. I believe that honourable members have a copy of this brief and will be able to follow me in the course of the reading.

The Agricultural Institute of Canada is the national organization of professional workers in agriculture. Its more than 3,000 members come from the Federal and Provincial Departments of Agriculture, the agricultural colleges and institutions, the experimental farms and research laboratories, the professional workers in industry and services and those actively engaged in farming. I should add here that our President for this year, Mr. Thomson, is an outstanding grain farmer from the province of Saskatchewan.

These professional men are providing the public services for agriculture—in research, in teaching, in extension, and in administration—in producing new varieties of grains, grasses, fruits, and vegetables in soil management, in breeding and feeding, in bringing this information to the farmer. This represents a public service of which the people of Canada may be justly proud. The progress made in Canadian agriculture is due largely to the scientific and practical work that these professional men are doing in co-operation with farmers.

As a professional body, the Institute regards the work and responsibility of your committee as of the very highest importance in terms of the future of Canada and of Canadian agriculture. For that reason, the Institute stands ready to co-operate to the fullest extent in providing whatever information and assistance it is possible to contribute. Included in its membership are many men who are devoting their entire life's work to the many problems dealing with land use, and all members in whatever capacity they may be serving are definitely interested and concerned with the findings of your Committee.

This subject of soil and water conservation, or what is now generally referred to as better land use, is so big and so far-reaching that the Institute felt it necessary and advisable at this time to record this submission in order to conserve the time of your Committee.

The terms of reference of your Committee are understood to cover two distinct phases:

1. Better land use, and
2. The relationship of better land use to the economics of farming.

Good land use or wise land use covers a very broad field. It involves not only the wise use of our land, but also rebuilding eroded or depleted soils, improving grasslands, conserving moisture, reducing flood damage, installing drainage, as well as a host of other related soil management problems. It also means carrying out those projects which the farmer cannot do alone, but which must be done. It means long-range planning.

It is the confirmed view of the Institute that with a broad national policy of land use, and with leadership and assistance from our Federal and Provincial Governments, the productivity of Canadian soils can be built up. What is needed is more efficient production on individual farm units through better use of our land or a more intensive pattern of land use. This would build and maintain soils for the future and, at the same time, give farmers a better financial return. Whatever moneys are spent by our Governments on better land use will be the best investment this country can make for the future.

All Canadians must be interested in a policy of conservation and better land use because such a program would produce real and enduring values for our Canadian people. Since this country of ours was opened up for settlement, the chief concern has been the problem of extending and developing resources of land. From our somewhat limited experience at this time, it cannot be assumed that the high fertility that came with our new lands will continue for an indefinite period. Where there has been poor farming or improper land use, there is certain to be loss of fertility. With the abundance of our resources of lands and forests, it has been very difficult to believe and realize that these resources could be depleted. As a consequence, there are two extremes of opinion: the alarmist, who says that our soils are blowing away, eroding, or deteriorating through bad use and that we are likely to suffer the same fate as can be seen in the ruins of Ancient Babylon; the other extreme view is held by those who proclaim that all discussions with regard to the conservation of our soils is just so much

nonsense. The Institute does not subscribe to either of these extreme views. Any inventory of the present position can be based on the simple fact that our soils represent for our people their most important asset. It was on and from these soils that our present economy was built. These soils represent the very foundation of that economy. It is but logical, therefore, to assume that this foundation must be kept sound and in a good state of repair. It is our bounden responsibility to do so.

It is hoped that the same mistakes will not be made in Canada that were made in many Old World countries where the land was overcropped and neglected and the forests destroyed. The Institute believes that, under a wise and sound national program our lands and forests can be not only protected, but built up to a much higher state of productivity. That is the ultimate objective. The Institute emphasizes that conservation or good land utilization is a national problem. It is further submitted that a well-balanced land use program can be developed under the guidance of Federal, Provincial and Municipal Governments. Moreover, the Institute has studied and knows the difficulties in establishing a National Program or Policy, and it is here that the work of this Senate Committee can be most helpful in overcoming the problems involved.

Before proceeding further, may we outline briefly what the Institute has been doing during the past fifteen years in connection with soil and water conservation. The problems of land utilization, of better land use, have been under constant study for many years. One might even say that it represents for our members a very important part of their life's work. Land use problems were highlighted by the disaster and tragedy that developed during the drought years of the 'thirties. At that time, the Institute established a National Committee on Soil and Water Conservation, and this National Committee has been active throughout the years. At the same time, the Provincial Branches of the Institute were asked to establish land use Committees to study their local conditions and to submit recommendations to the National organization. At the annual meeting of the Institute in 1947, held at Lethbridge, the convention devoted its entire time to soil conservation and land use. Several issues of our national magazine have been devoted exclusively to the use and conservation of Canada's farm lands to emphasize the question: "What are Canadians doing about this all-important matter?" In 1954 one of Canada's great commercial firms produced for the Institute a film on land use entitled "Proud Land". The purpose of this film was to help bring the problems of land utilization to the attention of the Canadian people. That same year the Institute joined with the Forestry Associations and the Canadian Wildlife Association in a resources conference, held at Ottawa. Incidentally, this was first natural resources conference held in 50 years.

At this conference, a panel of outstanding speakers, including two farmers, covered the important land use problems in the Maritime provinces, central Canada, the Prairie provinces, and British Columbia.

I believe it was Senator Molson who asked if there was a summary of legislation dealing with land use. One of the accomplishments of the Institute has been to compile a summary of legislation, at the federal and provincial levels, relating to soil and water conservation in Canada.

A copy of this compilation will be left with each member of the committee.

These activities of the Institute represent the highlights only, and do not by any means cover the work that has been done and is being done by many local groups and individuals. Here it should be emphasized that the work which has been done by the Institute, and by our professional workers, has provided a real stimulus for greater activity in the field of better land

use. Very definite progress in better land use has been made and we are confident that such progress will continue and grow.

Just what progress has been made during the last ten or fifteen years in better land utilization? Recorded here are only the more important achievements:

1. The work of the Prairie Farm Rehabilitation Administration in western Canada, which has demonstrated a fine co-operative working arrangement between the federal and provincial Governments.

This work has been well described to the committee. As you know, it arose out of an emergency situation.

2. The work being done by the Maritime Marshland Rehabilitation in the Maritimes. This is a reclamation operation.

3. The land use work being carried out by the various provincial Departments of Agriculture.

4. The report of the special committee appointed by the Ontario Government on soil conservation.

5. The work being done in Ontario by the River Valley authorities on flood control.

6. The work done on restoring tree cover to non-arable lands.

7. The development of soil improvement associations by the farmers themselves.

This last we regard as particularly important. A few years ago some of the provinces undertook to encourage and support county land use or soil improvement associations. These and many other examples might be given. Perhaps the most encouraging from the individual farmer's standpoint is the development of soil improvement organizations where farmers are meeting to study their own local land use problems.

From what has been accomplished and from all our investigations, the Institute has reached the following basic conclusions:

1. We have in Canada today many major land use problems and they differ widely between the East and the West.

2. In Eastern Canada and the Maritimes, these problems rank as follows in the order of their importance:

(*a*) Low soil fertility

(*b*) Poor drainage

(*c*) Soil erosion

(*d*) Improper land use

(*e*) Flood control

3. In the Prairie Provinces soil erosion is the main problem, caused in many cases by the improper use of the land. In some areas depletion of soil fertility is also beginning to become a problem.

4. In British Columbia, water control and soil fertility are the outstanding problems.

5. In spite of the many improvements that have been effected in our farming methods and in the production of better varieties of seed, our average yields have remained about stationary, and there is definite evidence in many areas of soil depletion and low fertility.

6. Our investigations have shown that more efficient production through better land use is the key to better returns to the farmer. This has been amply demonstrated on some of our farms in Canada, but particularly on British and Western European soils, where greater output has been achieved by the efficient use of their land through grassland

farming with livestock and the greater use of commercial fertilizers. Here we desire to emphasize that we are not attempting to compare European conditions with those in Canada.

7. It is known that crop and pasture yields in many parts of Canada are far from satisfactory and this is reflected in the returns to the farmer.

Summarising all this, we can say that a great deal has been done and is being done today regarding better land use, but the general conclusion is that the scale of effort is far from being in proper relation to the need. By far the greatest need is for leadership through a broad scale program of national planning to coordinate the work and to provide the machinery to deal with the major problems already referred to. It was with this in mind and for this specific purpose that the Institute, after years of intensive study and consideration, recommended to our governments and to the people of Canada a national policy of soil conservation and land use. This policy was discussed in all our branches across Canada and approved at our National Convention in 1948. This over-all policy was submitted to the Federal and Provincial Ministers of Agriculture. It received wide publicity in the press and has been referred to on many occasions. It has received the approval and support of farm organizations.

In 1954 the policy statement was further reviewed and rewritten with a view to:

(*a*) broadening the preliminary statement and recommendations in such a manner that the Institute, by its conservation policy, would draw support from and lend support to, other groups which were interested in conservation, whether these groups be primarily interested in agriculture, forestry, water power, flood control, or wild life.

(*b*) revising the preliminary statement and recommendations in the light of conservation work that has been undertaken in Canada since the former policy was developed, pointing out again that, as a result of experience gained, the Institute felt the development of an over-all national conservation policy was most important.

At the annual convention of the Institute held at Macdonald College in June, 1954, the following national policy statement was prepared and passed. The Institute respectfully submits this national policy or program for the information and consideration of your Committee. I have noted with interest the number of times that this policy has been refered to by previous speakers before this Committee.

That the conservation of the soil and water resources, combined with proper utilization of all lands, represents the most important natural resources problem facing Canada at the present time.

That the continuing productivity and better utilization of land, and the beneficial use, protection and control of the water resources are fundamental to the stabiilty of agriculture, and to the general welfare of a rapidly increasing population.

That the conservation, improvement and development of the land and water resources are the responsibility of the nation as a whole, through the federal, provincial and municipal governments, and the owners of land and users of water.

That, while the Institute views with satisfaction the conservation efforts and achievements to date by the federal, provincial and municipal governments, and the citizens of Canada, nevertheless a greater organized and coordinated effort in a more direct action program is essential to provide for the better use of land and water in the future.

That, as a result of experience and knowledge gained through the application of Government policies, both federal and provincial, the time is now appropriate to consider a national policy to encourage the coordination of all existing and future programs in a national undertaking for the further development and conservation of the land and water resources of the nation.

That, based on past experience, the work of conservation on the self-help plan with the farmer has proven to be economically sound.

The Agricultural Institute of Canada, therefore, recommends:

(*a*) That a national policy of soil and water conservation be established.

(*b*) That such a policy be coordinated with all related phases, such as headwaters control, forestry, fisheries, wildlife and recreation.

(*c*) That such a policy include provision for the coordination of the the administrative, research and educational agencies of all governments in order to provide all basic information in appraising and planning the different projects; that a national information and education office be established.

(*d*) That provincial Governments provide the legislation where necessary for the joint development of soil and water resources in a national plan.

(*e*) That provinces provide legislation and extend such aid and guidance to municipalities and farmers as will permit them to effectively conserve and better use the land and water resources.

(*f*) That the program be expanded for the training of personnel in specialized services required for further soil and water developments and that an adequately trained and experienced staff be provided to do the work with all users of land.

It is the view of the Institute that, under the above suggestions, a successful program could be implemented between the federal and provincial Governments.

The above program is recommended for consideration, to provide a broad national policy for the conservation of the soil and water resources in Canada. It should be added that these recommendations have the support of the Canadian Federation of Agriculture. Dr. E. S. Archibald, former Director of the Dominion Experimental Farms Service, and one of Canada's outstanding agriculturists, when writing on this subject, posed the question, "Why shouldn't we have a national policy of land use?" And the only answer is, "Why not?"

From the foregoing, members of the committee will appreciate that professional workers in agriculture, through the Institute, have endeavoured to give constructive leadership on the problems of land use. We in Canada have reached that stage in our development where we are attempting to look to the future, to determine what Canada will be twenty-five years from now, fifty years from now. In that attempt to look forward, we must look also to the land, to our good earth, that has been the source of all our progress. Moreover, we must understand that the building of major dams and reservoirs—very important as they may be—is only a partial measure and that effective soil and water conservation begins with organized and directed land use with our farmers.

The Institute believes that it is necessary to take a completely new look at the future of agriculture at this time. We are in a new era of mechanization, with a heavy overhead investment. Although we have made progress, we are a long way from applying fully our store of technical knowledge to produce the best land use results with better returns for the farmer.

Perhaps we should add here that since 1933 the United States has had a broad and comprehensive program of soil conservation and land use which

shares with farmers the cost of good land use practices. They have not by any means solved all their problems. It is a long-range program but they are making definite progress.

In this submission, it is not the intention to cover in any extensive way the economic situation as it pertains to agriculture today, except to state there has been a growing feeling that agriculture has not shared sufficiently in recent years in the general prosperity that has been enjoyed by other segments of our economy. As one speaker before your Committee suggested, the economic problems involved have been with us for a long time. While present surpluses of some farm products have created serious problems, the future holds considerable promise of improved markets. In this connection, one of the many encouraging signs is the rate and extent to which our population is increasing and the marked effect which this is having on our domestic market for farm products. At the present time, we are adding approximately one million new people to our population every two and one-half years, I think the basis for this year will be 1 million every 2 years. To this should be added the effect of the rapid increase in the population of the United States. It has been estimated that population increase during the next two decades on this North American Continent may add as much as 30-35 per cent to the total demand for farm products. Canadian farmers through better land use must be prepared to share this development.

In submitting these views to you, the Institute desires to emphasize one very important point. The farmer cannot very well do the job of soil conservation alone. His first responsibility is to make a living. He needs both help and guidance. We believe our farmers can and will shoulder their full share of the responsibility if they are given practical encouragement to do so. Nor can the professional workers in agriculture do it alone.

In concluding this brief, we submit that we must not wait until disaster strikes. Assistance and leadership is as much needed in soil depletion, in soil drainage or in developing local farm soil improvement associations, as it was in organizing the P.F.R.A. in Western Canada, or the M.M.R.A. in the Maritimes. It is time to start on a long-range coordinated program of soil building. Moreover, we are convinced that any moneys that Canada may invest in building up the fertility of our soils will return big dividends for the future.

That, Mr. Chairman, is our submission.

The Deputy CHAIRMAN: Mr. McGowan, I am sure that I am expressing the feelings of the members of the committee when I say we are deeply grateful to you for your very informative and thought-provoking brief. I also wish to commend you for the splendid way in which it was delivered.

With respect to technical workers in agriculture, I am wondering if the agricultural colleges today are turning out in sufficient numbers qualified men to look after this work? When I was with the Nova Scotia Department of Agriculture and Marketing it seemed very difficult for us to get well-qualified extension workers and men who would be qualified to help the farmers in farm management. I believe that this need is even more important today than when I was with the department in Halifax. Would you care to say anything about that, and also would you comment on what encouragement is being given to some of the bright young men to take these courses and qualify to work with the farmers?

Mr. MCGOWAN: Mr. Chairman, the Institute is endeavouring to publicize as well as they can the opportunities for the professional worker in agriculture in Canada. This publicity is being carried out through the high schools and various other institutions with a view to attracting more of our good young men from the farms to take this special training in order that they be

made available to carry out some of the important work that will have to be done in the future. However, we have to go further than that. In connection with farm management and farm planning we will have to establish a program of special training for our present graduates. Perhaps they should be sent to the United States for this training and then they could be brought back here to carry on the work in Canada. Perhaps Mr. McCannel, our Executive Secretary, could add to this.

The Deputy CHAIRMAN: Mr. McCannel, would you also deal with the forestry technical workers? A very important branch of our work in Land Use has to do with forestry.

Mr. J. E. McCannel, Executive Secretary, Agricultural Institute of Canada:

Mr. McGowan has touched on what the Institute is doing, but I would point out we are very vitally concerned over this problem. We agree completely that there are not enough bright young people going into agriculture today to begin to meet the needs in this field. That is one of our chief concerns at the present time. This year we are distributing across Canada something in the neighbourhood of 16,000 copies of a very attractive booklet on careers in agriculture. We hope this booklet will fully highlight the many attractive agricultural careers available. This year we are also producing a special issue of our review, dealing with the subject of careers in agriculture. Between 15,000 and 20,000 copies of this booklet will be distributed across Canada to schools and 4-H Clubs and that kind of outlet. Another important approach by way of encouraging professional trading is our scholarship program. This year we have launched a new program designed to provide a Rhodes scholarship type of assistance to our brighter young graduates. This will help them to go overseas and gain some of the very valuable experience that is available on the continent and in the United Kingdom.

The Deputy CHAIRMAN: Would that include forestry?

Mr. MCCANNEL: These scholarships are open to any graduate as long as his plans lead into the agricultural field. I think there would be some areas of forestry work which would qualify for this. To comment on the forestry situation itself, I do not feel too qualified except in a general way to state that there is a similar shortage of professionally trained people in the forestry field as there is in the agricultural field.

Senator WALL: May I go further into this problem? Is there nothing in the way of the projected thinking into the establishment of a National Foundation, of endowed moneys for this kind of thing? For example, you say there is going to be a Rhodes type of scholarships. How many would there be? I think I know the answer to the question, because we are beginning to nibble at the problem, which is really alarming. Would there be any hope through the Institute, or the Federation of Agriculture, and so on, that some scheme could be put into operation? Of course, I know everybody is collecting money for education, and one thing and another; but that is an area that I think merits the attention of the very best minds who are thinking about this problem. Telling boys and girls that there are some career opportunities now is all right—and 16,000 copies of these things will get around to a certain extent and I am sure will make a wonderful contribution—but in essence the crying need of the people, as I know them, is that they just have not the financial means to go ahead. Perhaps an endowment fund of some type, if organized and its possibilities looked at and assessed, would be a wonderful thing, and I am sure we would

get whole hearted support of all the farm organizations right across Canada. Surely, we can do something on a voluntary basis, and then perhaps prod the Government for help?

Mr. McGOWAN: May I explain that the Institute has already done that? Some years ago we established what we call a Scholarship Committee. Dr. Booth and I, and two others, worked on that committee, and we covered all our important commercial firms, and raised a considerable amount of money for scholarship purposes and have been able to help quite a number of our young men to go down into the United States, or overseas, and take advanced courses. But we can only touch on the fringe of this.

The Deputy CHAIRMAN: Senator McGuire?

Senator McGUIRE: What is the financial reward by way of salaries to men engaged in this type of work, in the promotion of better land use, and that sort of thing, compared with salaries for those engaged in geology, engineering and other like professions?

Mr. McGOWAN: I think, senator, the question is a very good one; you have touched on a very vital point. Some years ago I remember that I took an interest in that very question myself, and I remember so well the advertising that appeared on the same folder for a man required in agriculture, and he had to have a Master's degree, a very considerable background of experience and training, and the salary quoted was so much. Right on the same sheet an economist was required for some other departments and he had to be a university graduate, and that was all that was necessary, and the salary quoted was the highest. Mr. McCannel may be able to give you more detailed information on that, but I think the situation is better today than it was then. Is that right, Mr. McCannel?

Mr. McCANNEL: Yes, it is better, but we in the Institute are thoroughly convinced, and we feel we have plenty of evidence to back this up, that even with the improvement that there has been the situation in the agricultural profession today is anything but conducive to attracting our best young people into the profession if they are entering it for monetary gain. If you compare the training and experience, but particularly the advanced training, that our members have in comparison with any other profession, aside from perhaps the medical profession there is no other profession that has the same amount of advanced training as that of the agriculturist; yet I am sure that agriculture ranks among the poorest paid.

Senator TAYLOR (*Westmorland*): I would like to say something along that line. I had the experience of administering a department of agriculture for a period of 17 years, and I have found that there is a feeling among all classes of people that agriculture is just something a little lower than everything else. I think there is a job today to do that farmers themselves do not realize. There is a terrific public relations job to do, and we are not getting too much help. You can go into almost any theatre—or it is on television many evenings—and whenever farm life is being depicted, it is some old hick in overalls, who talks a language that even I, who was raised on a farm, hardly understand. The farmer himself has drawn himself into a shell, and has acquired an inferiority complex, and feels an inferior individual. That goes right down through society. I have been to many banquets, and at one in particular I took great exception to the fact that when a toast was proposed to the learned professions agriculture was not considered. It is a fact that today agriculture is looked upon by the general public as something inferior and that it is an industry that people who are fairly bright should not go into. I think this is a terrific public relations job to be done. I was very interested in the comments made by Senator Wall referring to the possibility of a Foundation being established,

and I do know that there are people in Canada who are willing to contribute vast sums of money to do something for agriculture. I am sorry to say this, but the fact remains that a few years ago there was a movement on foot in that direction, and because of politics the thing was killed. I think there is a grand opportunity for this committee in its work to emphasize and bring out those factors. Agriculture in Canada today should be regarded on the same high plane as it is in Great Britain, and some other countries, where it is an industry that everybody looks up to. The men and women engaged in it, in Britain I found, were college graduates, many of whom were going to medical school and spending their spare time on the farms, and they were proud and held their heads high. That attitude does not exist in Canada. There must be a job done in public relations, in my opinion, to bring agriculture up and get it on a pedestal where it belongs. One of the statements that Louis Bromfield made was that agriculture is the most important labour of mankind. Too few of us believe that. When that is done we will be able to make progress.

I am very much interested in the submission made this morning. It demonstrates the tremendous task ahead of the agriculturist. The fact remains that this question of salaries does not come fully to the public mind. I have had some experience, as my former colleague has, and I realize that we must try to get the salaries of agriculturists up to those of comparable persons in similar departments and other activities. There is a feeling among the farmers today that the agriculturists are paid more than they should be paid. I say, we are not paying them half enough. When the people of Canada realize that situation and we will start paying the agriculturists what they are worth we will get somewhere.

I think one of the functions of this committee could well be to bring to the attention of the people of Canada the significance and importance of the place filled by the agriculturist in Canada.

Senator CAMERON: I think, Mr. Chairman, that the average salary of the district agriculturist, at age 40, is around $6,000. I have just come from working with a group of 100 businessmen, of an average age of 40 years, whose average salary is $11,000—or nearly double that of the agriculturists.

Senator TAYLOR (*Westmorland*): Yes, and you are high on the agriculturist's salary.

Senator CAMERON: I know that, but these are two comparable groups of men. As Mr. McCannel pointed out, the agriculturists in many cases have a master's degree, while a third of this group of businessmen did not have any degree at all.

The Deputy CHAIRMAN: I think, Senator Taylor, that salaries have a good deal to do with our not being able to get technical agriculturists of the right type. However, I should like to take exception to your remarks that the agriculturist is not shown due respect. Perhaps as you did not intend that meaning to be taken from what you said, but that is as I heard it. May I say that in my province we have an experimental farm at which there are many technical agriculturists, and they are shown every respect as being the best we have among our people. The farmers too are respected; there is nobody quite as good as the farmer in my province.

Senator TAYLOR (*Westmorland*): But do the people generally hold that view?

The Deputy CHAIRMAN: Yes, I believe they do.

Senator TAYLOR: Then if they do, why do they not pay them for their services?

Senator MCGRAND: There has been, I think, a lack of missionary work among agriculturists. In the field of medicine, for example, everybody knew

that smallpox, diphtheria and polio were diseases which were dangerous to mankind, and direct efforts were made to wipe them out. But with respect to agriculture and its dangers, the public has not become conscious of the loss from erosion of soil, the removal of trees, and so on which destroy our economy. Fifty per cent of our population are not today aware of these dangers.

Mr. McGOWAN: They do not realize even the value of a new wheat variety for western Canada.

Senator WALL: Mr. Chairman, may I bring our attention back to what I think is the fundamental thesis in this presentation, and that is a national policy to encourage the co-ordination of all existing and future programs. I would think that within such a framework the P.F.R.A. and all other national information and educational offices would function. May I ask Mr. McGowan if he would be a little more specific with respect to that general framework within which there could be such a national policy of co-ordination.

Mr. McGOWAN: Yes, I would be glad to do so. The problem lies in our constitution; it is a question of jurisdiction. As you know, most of our land resources come under the jurisdiction of the provinces, and as a consequence we have not so far had national leadership.

Senator HOWDEN: Hear, hear.

Mr. McGOWAN: As I suggested earlier in my submission, I believe this is one place where the committee could do an outstanding job. There is definite proof that the job can be done: we have P.F.R.A. as an example of fine co-operation between the federal and provincial Governments. The dividing line has been broken between the provincial and federal authorities. I believe it was Dr. Leahey who told this committee that in the soil survey work you could not tell where the federal authorities ended and the provincial departments began.

We have been able to demonstrate that this co-operation can be accomplished but we need the broad all-over national leadership, or authority, or whatever it is to be called. It may be based on the pattern of the P.F.R.A., I do not know. That is a matter to which no doubt the members of this committee will give serious consideration.

Senator CAMERON: Do you think, Mr. Chairman, if this committee were to recommend the establishment of a national land resources board that it would get the co-operation of the provincial boards, and function in a national capacity?

Senator HOWDEN: If you could create something that would return the farmer's income to some extent, you would be moving in the right direction. The reason we are not getting ahead very fast in this country is because the agriculturist does not make enough money to spend a good portion of it on the farm land. That is where the money must be spent.

Mr. McGOWAN: I believe that co-operation can be secured. I believe it was the deputy minister of one of the provinces who appeared before this committee and spoke of the necessity for the federal and provincial Governments to work together.

Senator HOWDEN: But the farmer cannot do it himself, except in a few instances.

Senator MOLSON: Mr. Chairman, in the course of the evidence heard by the committee some witnesses expressed concern about the withdrawal of valuable agricultural land for urban and industrial development. Does the Institute have any views on that particular problem?

Mr. McGOWAN: I do not think the Institute has given a great deal of serious consideration to that particular problem, senator, at least to my knowledge.

Mr. McCANNEL: Perhaps I can add something on that question, Mr. Chairman. I believe it was at the convention in Edmonton in 1955 that this matter was placed before the annual meeting.

A resolution was passed that the question be investigated by a committee; quite an extensive survey was made throughout the provinces, the outcome of which showed there were two and perhaps three provinces in Canada in which the Department of Agriculture was at all concerned with the use of valuable land for industrial and urban development; the remainder of the provinces were not concerned. Therefore, the committee concluded that at the present time we, as a national organization, should not become too involved in it, but that our provincial divisions where the problem existed might be concerned with it.

Senator LEONARD: On page 8 of the memorandum the Institute refers to the experience in the United States. I was wondering whether there is any publication available to us which would describe their program, and which gives the results attained, in fairly concise form.

Mr. McGOWAN: I am sure there is a mountain of literature on the U.S. soil conservation work.

Senator LEONARD: That is not what we want.

Mr. McGOWAN: I know that is not what you want. I feel sure that, perhaps in a condensed form, something could be secured for you. I think Mr. McCannel might be able, on behalf of the committee, to present something that will not be too lengthy nor too involved.

Senator LEONARD: Thank you very much. It is interesting to know that they have the same constitutional problems as between the States and the Federal Government.

Mr. McGOWAN: I do not think that we are faced with the same constitutional problem, that is, in that form.

Senator CAMERON: Would you feel that one of the reasons this problem has not received the attention it warrants is that universities have not been sufficiently alive to the importance of more courses in farm management in their agricultural programs?

Mr. McGOWAN: Perhaps there is some truth in what you say, Senator, but I think that that phase of educational training in agriculture is gradually assuming greater and greater importance; and I feel sure that, as far as our institutes are concerned, they will really devote more time to that in the future, because it is a very important part of the program which faces us in the future.

The Deputy CHAIRMAN: Any further questions?

Senator BARBOUR: Mr. Chairman, is not our farm economy controlled pretty well by prices and by surpluses, in that there is too much of certain commodities? Is that not one of the things that are holding back the economy of the provinces? In other words, what keeps our farm economy at a low level is not the need of more produce, but, very often, that there is too much.

Mr. McGOWAN: I think we have to consider that question—and it is a very important one—in a rather different light. You have had some evidence before this committee to the effect that the gross returns from a percentage of our farms are under a certain figure. The same thing applies in the United States. It would seem to me, though I am not an economist, that for those people who are in the low gross the price is not going to affect them very much, it is not going to give them an acceptable form of living; their only hope is to get that gross up so that their net returns will give them a better and more acceptable farm life. I am not sure that I have made myself perfectly clear on that.

The Deputy CHAIRMAN: Yes.

Senator HOWDEN: In other words, the farm land is not going to be improved unless we can find some means of obtaining wealth with which to improve it.

Mr. MCGOWAN: So that the operations will yield a better net return.

Senator BOUCHER: In paragraph 5 of your conclusions you say that "in spite of the many improvements that have been effected in our farming methods . . . . our average yields have remained about stationary." That does not apply to wheat, does it? I believe there has been quite an improvement in our yields of wheat.

Mr. MCGOWAN: Well, I would not say that there has been an improvement in the yields of wheat. I think that our wheat yields depend almost entirely on the climatic conditions which prevail in the year in which a crop is harvested.

Senator HOWDEN: Would you not think that our several wars have improved prices for wheat?

Senator BOUCHER: And the use of fertilizer, I think, has increased our yields.

Mr. MCGOWAN: We are not using so far very much fertilizer in the production of wheat. I do not know whether we should get into a discussion of fertilizers, but we have quite an area in the west where it is doubtful if fertilizers add value to the soil. In some areas fertilizers can be definitely helpful in building up the productivity of the soil. But one cannot speak generally for all of western Canada in commenting on that subject.

Senator BOUCHER: Is the president of your organization Mr. Thompson, of the University of Saskatoon?

Mr. MCGOWAN: You are thinking of Mr. L. B. Thomson?

Senator BOUCHER: No.

Mr. MCCANNEL: The president of the University of Saskatchewan is also a Mr. Thompson. This is W. P. Thompson. At one time he was a professor at the University of Saskatchewan and at the University of Manitoba, but he has farmed continuously since 1933.

Senator BOUCHER: What part of Saskatchewan?

Mr. MCGOWAN: At Pense, Saskatchewan, which is about half way between Moose Jaw and Regina.

Senator STAMBAUGH: I would like to compliment the speaker on the answer he gave as regards the use of fertilizers in the west. Certainly it was a very good reply.

Mr. MCGOWAN: Senator Stambaugh, as you know, we have an area in the west known as gray wooded soils. A certain amount of research work has been done on these soils by Dr. Wyatt, and certain conclusions have been reached with regard to the handling of these soils for the future. Fertilizer will definitely be needed for leguminous crops—clover crops, to help them regain fertility and build it up. In the drier sections there are other soils where fertilizer would not have the same effect and certainly not give farmers worthwhile returns. But that is not to say that fertilizers are not very important in our farming economy.

Senator STAMBAUGH: I would like to say that the gray wooded soils are the only soils to date which have consistently shown that fertilizer pays.

Mr. MCGOWAN: That is, in wheat growing.

Senator STAMBAUGH: Yes.

The Deputy CHAIRMAN: Any further questions? . . . . I want again, Mr. McCannel, to thank you very sincerely for taking the time to come here, and also for having the patience to wait for us this morning for an hour, because of an unforeseen event, that is a meeting of the natural resources committee this morning to deal with a bill.

Senator CAMERON: On fertilizers?

The Deputy CHAIRMAN: We will certainly give careful thought to your brief, and especially to your recommendations. It may be necessary for us to call on you again. If we do, I hope that you won't mind. Thank you, and thank your organization for this brief.

Hon. SENATORS: Hear, hear.

Whereupon the committee adjourned.

SENATE OF CANADA

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