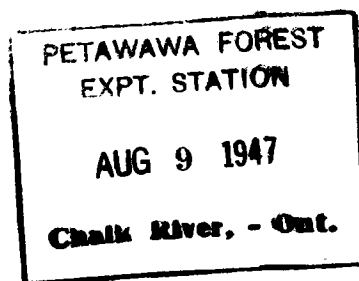


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NATIONAL RESEARCH COUNCIL OF CANADA

PROCEEDINGS
OF THE
EIGHTEENTH MEETING
OF THE
SUBCOMMITTEE ON FOREST TREE BREEDING
ASSOCIATE COMMITTEE ON FORESTRY



OTTAWA

5 MAY, 1947



NATIONAL RESEARCH COUNCIL

PROCEEDINGS OF THE EIGHTEENTH MEETING OF THE
SUBCOMMITTEE ON FOREST TREE BREEDING
ASSOCIATE COMMITTEE ON FORESTRY

Held in Room 2121, National Research Council,
Sussex Street, Ottawa, on 5 May, 1947, at 2:00 p.m.

Members present:

Mr. D. A. Macdonald (Chairman)
Dr. E. S. Archibald
Dr. N. H. Grace
Dr. C. C. Heimbürger
Dr. C. G. Riley
Mr. W. M. Robertson
Dr. H. A. Senn
Mr. J. L. Farrar (Joint Secretary)

Visitors present:

Mr. A. W. McCallum
Dr. J. J. de Gryse
Dr. P. R. Gorham
Mr. H. D. Heaney
Mr. S. J. Cook
Mr. W. van Steenburgh
Mr. M. B. Davis
Mr. G. Tunstell
Dr. A. W. S. Hunter

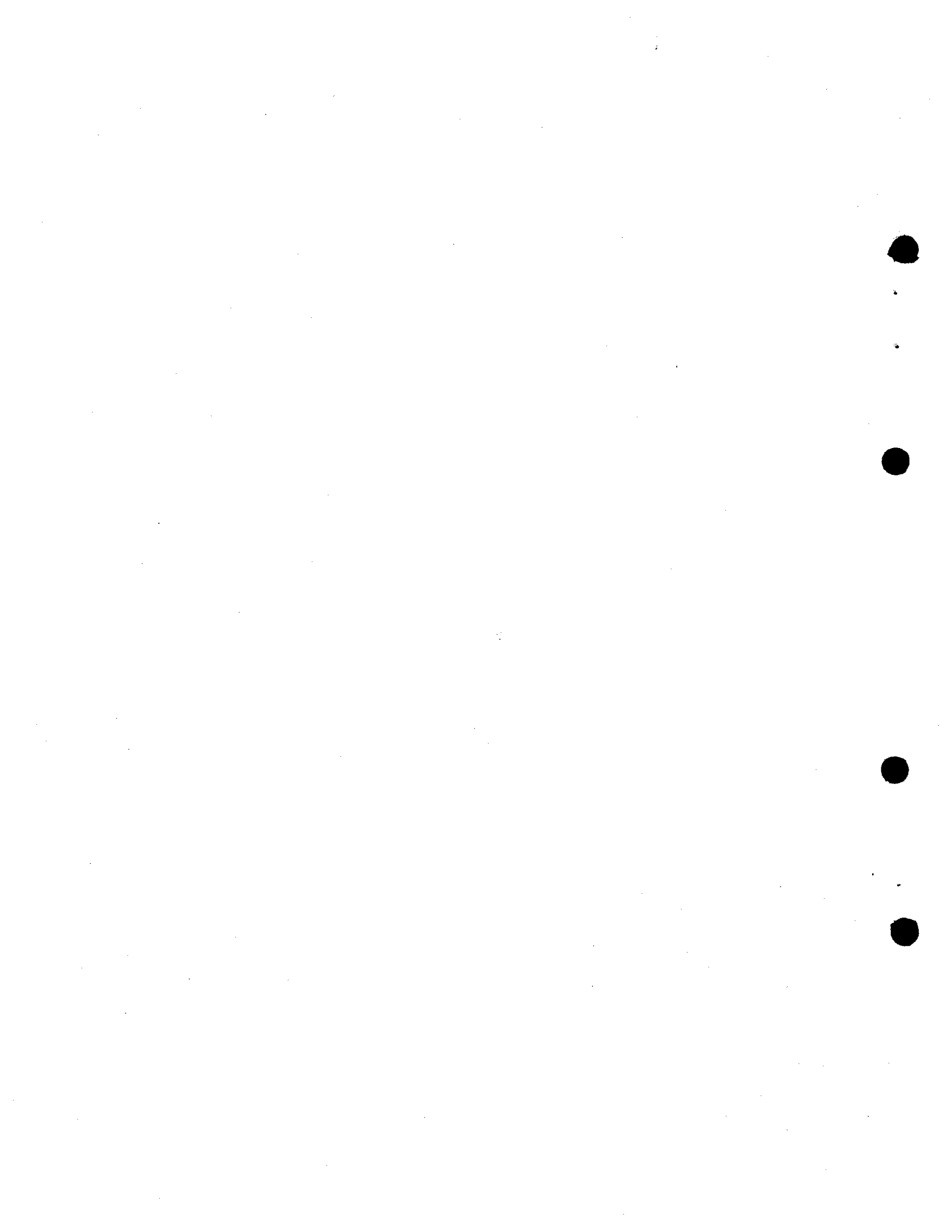
185. The minutes of the Seventeenth Meeting were tabled.

186. DISEASE GARDEN AT CONNAUGHT RANGES

Dr. Riley reported that the land selected in 1946 for the new disease garden at the Connaught Ranges (Minute 176) had been cultivated in a very satisfactory manner. He and Mr. Farrar were planning to move there some of the white pine now growing in the disease garden at the Montreal Road Annex of the National Research Council (Minute 180). About one acre has been cultivated and eight acres more are available at any time.

187. PAPERS BY DR. L. P. V. JOHNSON

The Chairman remarked that five papers by Dr. Johnson had been published in the December, 1946, issue of the Canadian Journal of Research (Minute 179). See also Appendix C.



188. LACK OF PERSONNEL IN FOREST GENETICS AND PATHOLOGY

It was recognized by all that the lack of personnel was seriously hindering the work. Some of those present felt that salaries should be offered which were large enough to attract fully qualified men. Others were of the opinion that it would be better to hire recent graduates in forestry or agriculture and provide them with such additional training as was necessary. Mr. Macdonald pointed out that at present it was very difficult to hire graduate or undergraduate foresters at the salaries now being offered, but the situation might change in a year or two. Mr. Davis stated that judging by the number of applications, students in agriculture could be hired readily.

Mr. Cook pointed out that the National Research Council had awarded a large number of scholarships though none had been in forestry. It was suggested that the Subcommittee might contact the forestry schools urging them to encourage suitable students to apply for scholarships to carry on graduate work in forest genetics and pathology. Such applications must be submitted prior to February 15th for the term beginning in September.

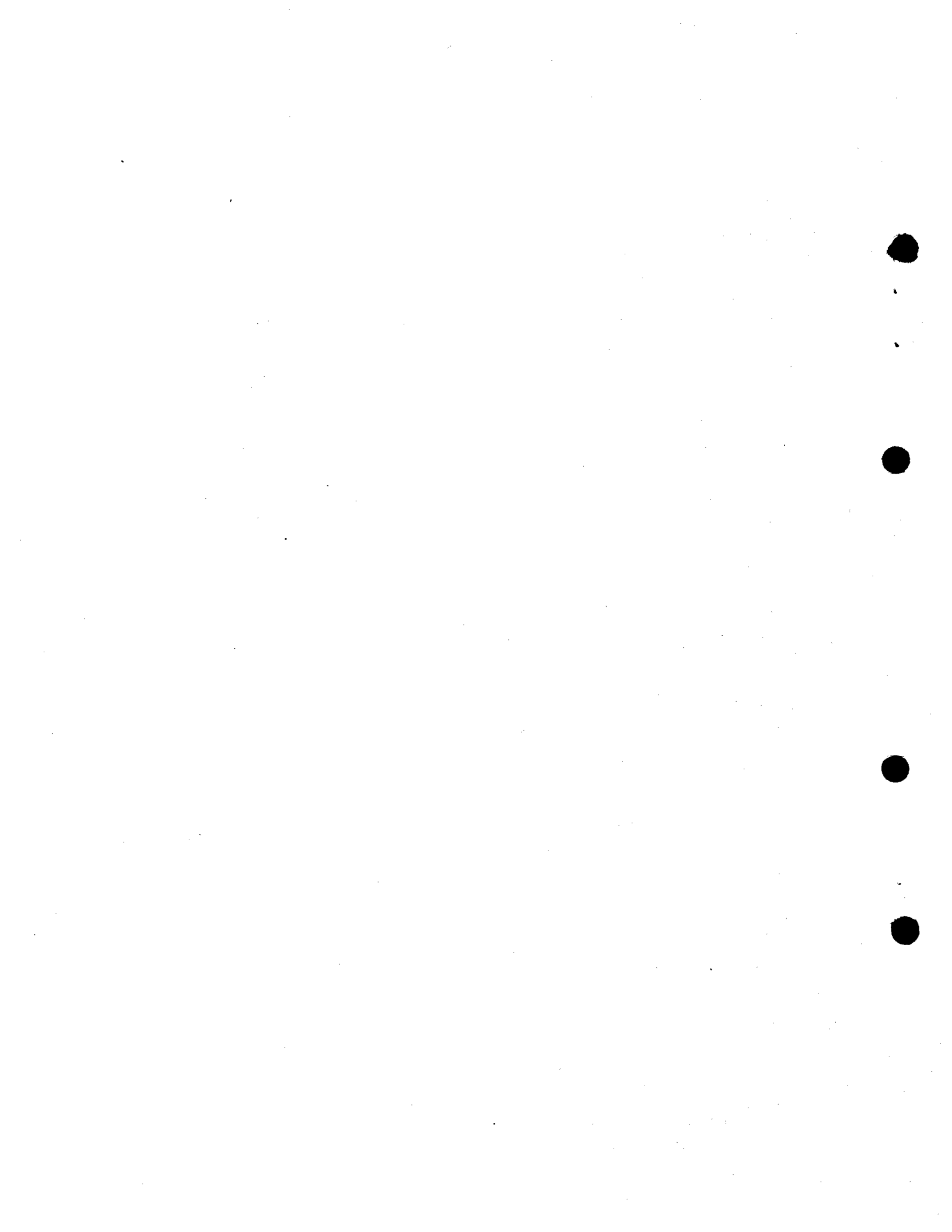
Dr. de Gryse stated that during his trip to Europe he had met qualified scientists who were anxious to come to work in Canada at present salary rates. Such men may be admitted to the country to work in a particular line if it can be proven there are no trained personnel who can do the type of work involved.

The possibility of getting projects started through the Assisted Research grants of the National Research Council was mentioned, but it was pointed out that such grants could not be used to hire assistants for men in government departments. The conditions are fully covered in Minute 165.

189. DUTCH ELM DISEASE

The Chairman asked Mr. van Steinburgh to open the discussion on Dutch Elm Disease. He outlined the history of the disease in Canada and the unsuccessful attempt to control it by eradication. Studies of the fungus and its vector were now in progress by pathologists and entomologists. It was felt however that the breeding of a resistant type of elm offered the best chance. Hence the matter had been brought to the attention of the Subcommittee in Forest Tree Breeding in the hope that a breeding program would be organized and executed.

Dr. de Gryse stated that very little is known about the vectors of the disease, hence the insects should be subject to intensive study. Such work was being carried on in close cooperation with the Forest Entomological Division of the Quebec Department of Lands and Forests. Attempts at eradicating the



disease in Holland and the United States had been unsuccessful, and attention was now being given to breeding disease-resistant elms. However, he was in favour of selecting resistant trees among our native elms rather than breeding new ones which might not have the large graceful forms of Ulmus americana. Furthermore breeding new varieties is a very slow process. He mentioned that valuable elms can be protected by annual sprays of D.D.T.

Dr. Heimburger felt that breeding offered considerable promise. The disease probably originated in the Orient and hence it was to be expected that resistant varieties would be found there. Chinese elms in horticultural nurseries near Toronto have borne seed fertilized by native seedlings. He considered that these hybrid seedlings should be investigated.

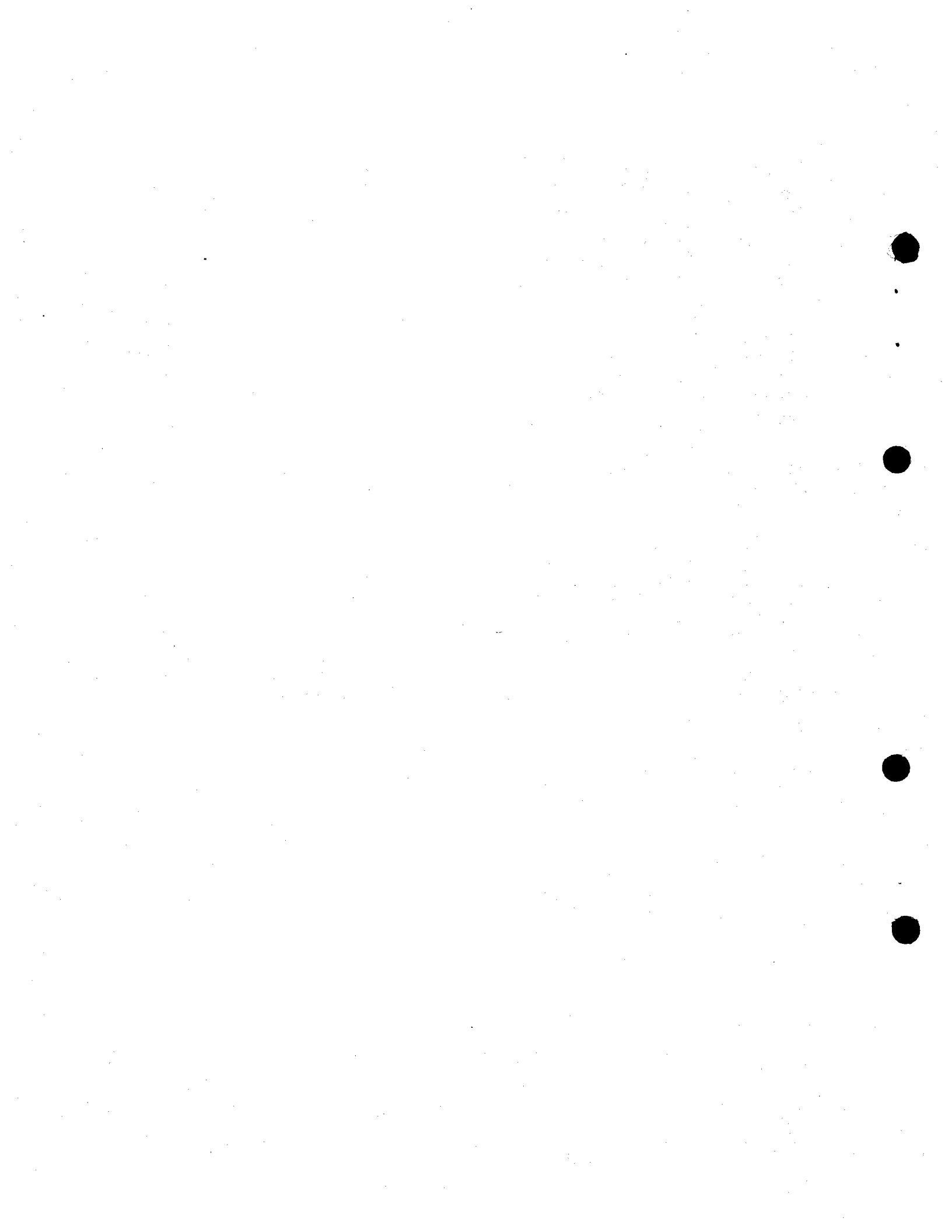
It was the consensus of opinion that the best line of approach was to search the infested areas for disease-resistant individuals, grow seeds and cuttings from such trees, and subject them to further tests in the nursery. The forest nursery at Berthierville under the Quebec Department of Lands and Forests and the Dominion Experimental Farm at Lennoxville were suggested as appropriate localities for the nursery since they are in the infested areas. Dr. Archibald offered to have seeds and cuttings grown at Lennoxville. Dr. de Gryse was sure that co-operation would be available from those in charge at Berthierville, and that he might possibly receive a quantity of seed from the United States within a few days. Mr. van Steinburgh reported that the Montreal Botanical Garden had no available space. The Petawawa Forest Experiment Station is outside the infested area.

This plan requires the co-operation of forest entomologists, pathologists, and tree breeders; the last-mentioned being unavailable. Mr. Farrar stated that less than half his time was available for tree breeding -- insufficient to carry out the projects already underway. However, he felt that if a recent graduate in forestry were assigned to work under him on tree breeding that present projects and also the proposed project on the Dutch Elm Disease could be dealt with.

A committee was appointed to study ways and means of implementing the plan outlined above:

Mr. McCallum (Chairman)
Dr. de Gryse
Mr. Davis
Mr. Farrar.

Dr. Grace mentioned that the use of wetting agents might increase the efficiency of a spray; and that elms now growing at the Montreal Road Annex of the National Research Council should be investigated. Dr. L. P. V. Johnson did considerable work in elms and several of his papers dealt with elms. Mr. Cook suggested that the facilities of the National Research Council might be available to undertake any chemical analyses.



Dr. Senn suggested that the phloem necrosis disease might prove more serious to the elms than the Dutch Elm Disease. It is spreading north from the southern United States.

190. REORGANIZATION OF THE SUBCOMMITTEE

The Chairman pointed out that the present set-up of the Subcommittee was not entirely satisfactory and that several changes had been suggested such as: representation from provincial forestry organizations and the forest schools; change in status to that of an Associate Committee; extension of the field of activity to include more than forest tree breeding; establishment of a regional committee in British Columbia. Dr. Grace, speaking for Dr. W. H. Cook, Director of the Division of Applied Biology of the National Research Council, outlined alternative procedures. The subcommittee might want to dissociate itself from the National Research Council in view of the fact that the Council no longer engaged in forest tree breeding directly. If it chose to stay under the Council, it could request for the status of an Associate Committee. In any event it could request that its membership be more representative and that its terms of reference be broadened. Opinion was strongly in favour of staying under the National Research Council, since it was felt that the Council served a valuable function in getting the various organizations to act together. There was a lengthy discussion on the question of remaining a subcommittee under the Associate Committee on Forestry, but it was finally decided, on motion by Mr. Robertson, seconded by Dr. Riley, that we make formal application for the status of an Associate Committee in Forest Tree Breeding under the National Research Council. A committee was appointed to act with Mr. Cook in drawing up the terms of reference and other details to present to a meeting of the National Research Council.

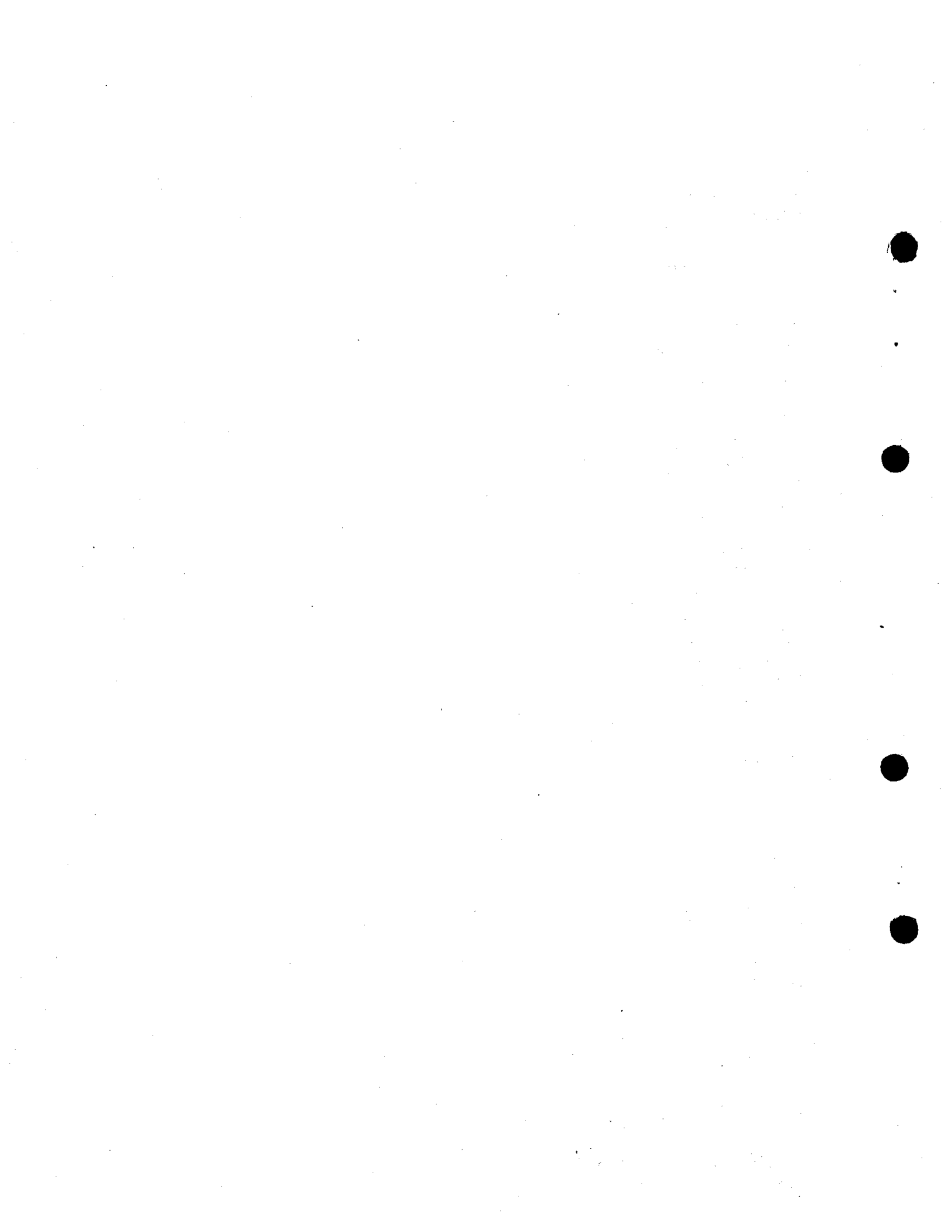
Mr. Macdonald (Chairman).
Dr. Riley
Mr. Farrar

The other matters in connection with the reorganization of the subcommittee were also left with the above-named committee. It was felt that whereas entomology, pathology, etc., played a large and important part of the subcommittee's work, the term Forest Tree Breeding was sufficiently inclusive and should not be changed.

191. The Chairman mentioned that a prominent forest geneticist from Sweden, Dr. Helge Johnsson, would visit Canada during 1947.

192. AGREEMENT WITH MR. PINHEY

In view of the necessary curtailment of our work due to lack of staff, it was felt that our agreement with Mr. Pinhey to grow certain trees on his land should be allowed to lapse.



193. ANNUAL REPORTS

Reports by Dr. Riley, Mr. Farrar and Dr. Johnson were tabled and are attached as appendices. Dr. Heimburger's program of white pine breeding may be found in Technical Circular No. 145, of the Ontario Department of Lands and Forests issued February 14, 1947.

194. The meeting adjourned at 5:00 p.m.



APPENDIX A

ANNUAL REPORT FOR THE YEAR 1946, TO THE SUBCOMMITTEE ON FOREST TREE BREEDING, NATIONAL RESEARCH COUNCIL

SECTION V (PATHOLOGY) - C. G. Riley

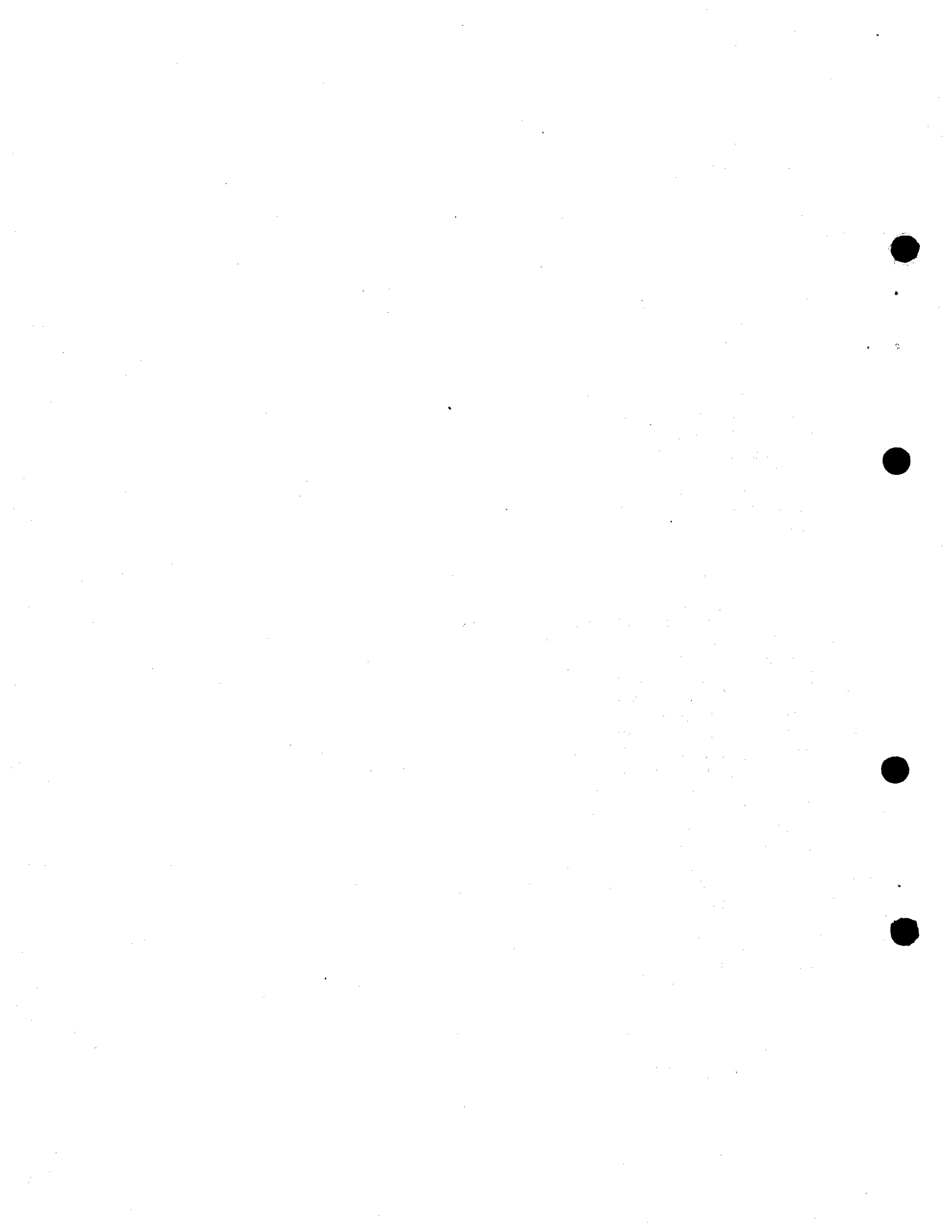
As in previous years the pathological requirements of this subcommittee have been only partly met, owing to the shortage of personnel. A great deal of required research continues to be neglected. Carefully conducted inoculation experiments could be expected to speed up the work and save years of observation in some instances. There is also need of detailed studies into the diseases concerned. The situation with respect to number of personnel in the Forest Pathological Service has improved somewhat in the past year, and there are indications that this improvement will continue, though it will be a slow process at best. As far as this subcommittee is concerned, the advantages of this improved situation are partly offset by the fact that the existing personnel in forest pathology are being spread out more thinly over wider territory.

Project V-A-1, Resistance to diseases in poplar breeding materials

The regular annual inspection of poplar in the nurseries and plantations at the Petawawa Forest Experiment Station was made in September 1946. As in previous years, the principal disease found was poplar-larch rust (*Melampsora medusae* Thüm.). The degree to which each lot of poplar had been attacked was noted according to Schreiner's schedule. It has been the practice in previous reports to present these data in detail. This method will not be followed in the present report. Instead, it is proposed to condense the results of all observations to date into a single report, thus summarizing the results of a number of years of observation. The last such report was presented in the Proceedings of the Eighth Meeting of this subcommittee, 15 April, 1942. The data for 1946 will be available to any member of the subcommittee requiring them. It has not been possible to prepare the proposed new condensed report in time for this meeting, due to lack of assistance. It is anticipated that this situation will be relieved somewhat in the approaching summer.

Project V-B-1, Resistance to blister rust in white pine breeding materials

The white pine breeding materials in the disease garden at the National Research Council Annex were not inspected in 1946. They are to be inspected this season as soon as seasonal conditions become favourable, or before they are transplanted to the new site at Connaught Ranges. Diseased trees may be discarded.



APPENDIX B

ANNUAL REPORT ON FOREST TREE BREEDING AND PROPAGATION

for the year 1946 - 47.

presented to

THE SUBCOMMITTEE ON FOREST TREE BREEDING

The writer has fallen heir to the Projects formerly undertaken by Dr. Johnson of the National Research Council and Dr. Heimbürger of the Dominion Forest Service. Since his main assignment is Forest Ecology, only a limited amount of time has been devoted to tree breeding. Field work has consisted of maintaining existing stock and completing experiments already started. The important job of selecting and testing the plants has been neglected. This situation is unsatisfactory but could be greatly improved by assigning a recent graduate in forestry to work under the direction of the writer. Even an inexperienced man could carry on the present projects in a satisfactory manner and would likely be able to undertake a limited amount of new work.

At the Petawawa Forest Experiment Station the plants in nurseries and plantations have been cared for. However, several thousand conifers and hardwoods in the nurseries are in urgent need of being transplanted to a permanent location; it is hoped to take care of the important ones this coming spring. Pollen of some exotic pines was used in crossing native pines in the spring of 1946. Cross-pollinated seed of pine was collected and sown in the autumn of 1946. Considerable work was done in bringing the records up to date and labelling the plants in the field, but this was not completed. A number of clones of poplar were distributed to the Forest Nurseries (Department of Agriculture) and the Ontario Department of Lands and Forests. The last named organization was also assisted in certain projects concerned with the improvement of white and red pine.

At Ottawa stem cuttings were collected from the white pine at the disease garden in the Montreal Road Annex of the National Research Council. (These are being propagated at Petawawa). Arrangements have been made to transplant these white pine to the new disease garden at the Connaught Ranges under the control of the Department of Agriculture. The other species are being left in place and are likely to be destroyed at any time.

A paper was prepared for the British Empire Forestry Conference (1947) entitled "Forest Tree Breeding in Canada." This paper traced the history of the subcommittee and summarized the results obtained to date by the men working under its direction.

(Sgd. J.L. Farrar,
Forest Engineer,
Dominion Forest Service.

Ottawa,
1 May, 1947.



APPENDIX C

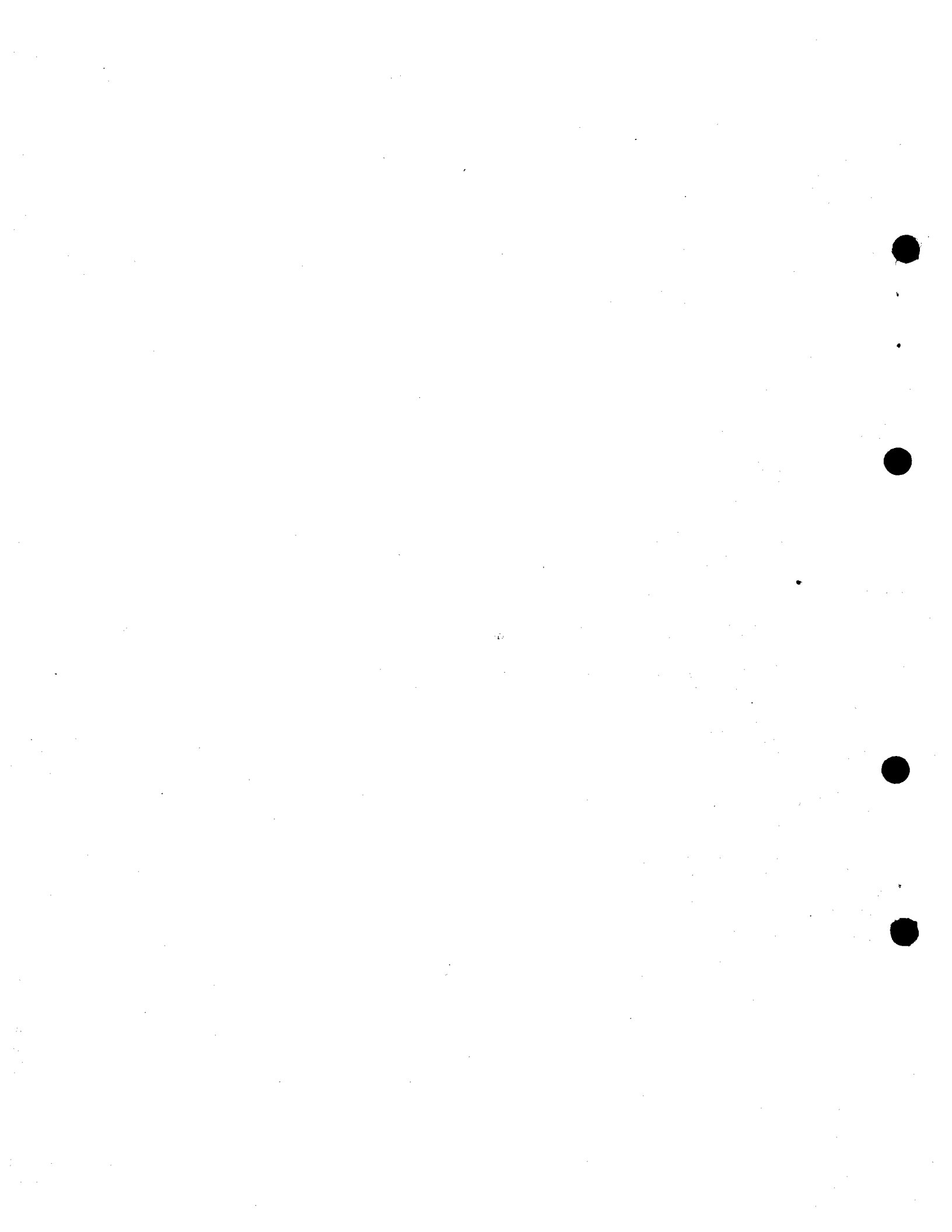
1946 REPORT ON FOREST TREE BREEDING

L. P. V. Johnson

Activities during the year (to mid-August) were almost entirely devoted to finishing-up the work in progress and preparing the results for publication.

Papers published during the year, and which collectively represent a completed report, are as follows:

1. Fertilization in *Ulmus* with special reference to hybridization procedure.
Can. J. Research, C, 24: 1-3, 1946.
2. Effect of chemical treatments on the germination of forest tree seeds.
Forestry Chron. 22: 17-24, 1946.
3. Breeding forest trees. Canada Lumberman 66(13): 22-24, 48, 50. July, 1946.
4. A practical method of overcoming seed dormancy in *Tilia americana* L.
Forestry Chron. 22: 182-190. 1946.
5. Effect of humidity on the longevity of *Populus* and *Ulmus* seeds in storage. Can. J. Research, C, 24: 303-304. 1946.
6. Colchicine treatment techniques for sprouted seeds and seedlings (with H. W. Holtz).
Can. J. Research, C, 24: 303-304. 1946.
7. Hybridization technique for forest trees (with E. C. Bradley).
Can. J. Research, C, 24: 305-307. 1946.
8. Preliminary report on interspecific hybridization in forest trees (with C. Heimburger).
Can. J. Research, C, 24: 308-312. 1946.
9. A note on inheritance in F_1 and F_2 hybrids of *Populus alba* L. x *P. grandidentata* Michx.
Can. J. Research, C, 24: 113-117. 1946.



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