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NATIONAL RESEARCH COUNCIL OF CANADA

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PROCEEDINGS

OF THE

NINETEENTH MEETING

OF THE

SUBCOMMITTEE ON FOREST TREE BREEDING

OF THE

ASSOCIATE COMMITTEE ON FORESTRY

OTTAWA

28 NOVEMBER, 1947

NATIONAL RESEARCH COUNCIL

PROCEEDINGS OF THE NINETEENTH MEETING OF THE

SUBCOMMITTEE ON FOREST TREE BREEDING

ASSOCIATE COMMITTEE ON FORESTRY

Held in Room 503, Norlite Building,
Wellington Street, O t t a w a,
November 28, 1947, at 2.00 P.M.

Members present:

Mr. D. A. Macdonald

Dr. N. H. Grace

Dr. C. C. Heimburger

Dr. C. G. Riley

Dr. H. A. Senn

Mr. J. L. Farrar (Secretary)

Visitors present:

Mr. A. W. McCallum

Mr. J. J. de Gryse

Dr. P. R. Gorham

Mr. S. J. Cook

Mr. G. Tunstell

Dr. A. W. S. Hunter

Mr. R. W. Oliver

195. The minutes of the eighteenth meeting were read and approved.

196. PROPOSED CHANGE IN THE STATUS OF THE SUBCOMMITTEE.

Mr. Macdonald reported that since the last meeting of the Subcommittee the Associate Committee on Forestry had resumed activity. In view of this, he recommended that the Subcommittee continue in its present status and refrain from making application for the status of Associate Committee (Minute 190). The Meeting agreed.

197. PROPOSED CHANGES IN THE SCOPE OF THE SUBCOMMITTEE

The Chairman read extracts from the Proceedings of the Tenth Meeting of the Executive of the Associate Committee on Forestry (Exhibit "A"), in which the Subcommittee was requested to consider enlarging its scope to include the field of Forest Ecology. The arguments in favour of the proposal were that there should be some body to deal with the biological aspects of forestry and that most of the men qualified to deal with tree breeding could also deal with other biological aspects. Hence by enlarging the Subcommittee only slightly it would be a suitable body to deal with Forest Ecology as well as Tree Breeding. In opposing the suggestions it was pointed out that the Associate Committee included several men competent to deal with the biological aspects of forestry, that ecology was a large general field, and that a subcommittee was most likely to function efficiently if it confined its attention to one particular assignment.

On motion of Dr. Senn, seconded by Mr. Tunstell, the Subcommittee agreed to recommend to the Associate Committee on Forestry that it set up another Subcommittee to deal with requests for "grants-in-aid" for all forestry research. The meeting visualized a small subcommittee of three or four men empowered to call in specialists for advice on the subjects being considered.

The Subcommittee recommended further that it be permitted to carry on its present functions under its present name.

198. PROPOSED CHANGES IN MEMBERSHIP

Dr. Heimburger suggested that the provinces concerned with tree breeding be represented in the Subcommittee. The Secretary pointed out that this matter had already been considered favourably (Minutes 164, 168). Mr. Cook stated that the policy of the National Research was that changes in personnel of subcommittees must be submitted through the parent Committee. The Subcommittee agreed that the Associate Committee on Forestry be approached for permission to contact the various provinces with a view to having representatives appointed from those provinces interested in tree breeding. It was also agreed that the universities be contacted for the same purpose.

199. DUTCH ELM DISEASE

Mr. de Gryse reported that he had circulated information on the Dutch Elm Disease received from Dr. Curtis May, of the United States Department of Agriculture. Considerable breeding work is being done under Dr. May, but he is not in a position to supply us with materials. Mr. McCallum reported that since no tree breeder was available to collect materials and supervise their propagation and testing, no action had been taken since the last meeting. Mr. Macdonald felt that the Quebec Forest

Service should be informed of our interest in this disease since it occurred chiefly in that Province.

Since there is no prospect of hiring further staff for the next several months it was decided that the only alternative was to see if any university professors or assistants would be interested in carrying out work on the Dutch Elm Disease under a "grant-in-aid". Various members agreed to contact universities in a private capacity.

200. REPORT BY DR. HEIMBURGER

Dr. Heimburger reported on his work with the Ontario Department of Lands and Forests. The main concern is the development of a superior type of white pine resistant to blister rust and the white pine weevil. In 1946 superior stands had been selected and seed collected from them. Seed of western white pine had been obtained from British Columbia. Over 1,000,000 seedlings were now being grown in the nurseries at St. Williams, Midhurst and Orno. At the end of their first growing season these seedlings had been sprayed and dusted with spores of the blister rust under conditions favourable for infection. It was hoped that by repeating this yearly most susceptible plants could be eliminated during the period they were grown in the nursery. Dusting is more promising than spraying as the water damages the spores.

Some of the most interesting work has been done in grafting following the work of tree breeders in Sweden and Denmark. Scions from mature trees of three white pines (P. strobus, P. peuce, and P. excelsa) have been successfully grafted on young Scotch pine in cold frames. Scotch pine has proven to be particularly suitable as the stock plant. Grafting has also been done outdoors on small trees in plantations. Bud grafting has been attempted using buds formed in needle fascicles by the stimulation of removing all normal buds on the twig. The rust free white pines at Point Plateau, Quebec, have been successfully propagated by grafting.

Propagation by cuttings has also been done. Cuttings are collected in autumn, heeled in over winter, and planted out in cold frames. They root the same summer.

The induction of early flowering is being attempted by girdling and strangulation.

Some breeding is also being done with poplar. Cuttings have been obtained from several localities in Europe. Aspen from Lake Nipigon region has been successfully grafted on suckers. Cuttings have also been obtained from material at Petawawa and the N.R.C. Annex.

Dr. Heimburger also mentioned the work of Dr. Duff, of the University of Toronto, in studying the flowering of red pine.

201. REPORT BY DR. GORHAM

Dr. Gorham reported on the work at the Montreal Road Annex of the N. R. C. Some of the plants from the arboretum, which is liable to be destroyed by buildings, (Minute 167), had been moved to a new plot of land north of the present site. Representatives of each lot were taken, and in addition substantial numbers of several lots of white pine and a group of hybrid elms. Dr. Earle of Queen's University was supplied with poplar cuttings.

Dr. Gorham stated that there was still a considerable number of young white pine left in the arboretum. Mr. Farrar undertook to move as many as possible to the Disease Garden at the Connaught Ranges next spring.

202. REPORT BY MR. FARRAR

Mr. Farrar reported that about half of the blister-rust-free white pine at the N.R.C. Annex had been moved to the Connaught Ranges with the co-operation of the National Research Council and the Department of Agriculture. Most of the plants had survived, but weed growth was more troublesome than expected. The Department of Agriculture had prepared another acre of ground which will be planted up next spring with white pine from the N.R.C. Annex and Petawawa. At Petawawa work was still on a maintenance basis due to shortage of personnel. Plants are being properly looked after and new work can proceed as soon as personnel are available.

203. REPORT BY DR. RILEY

Dr. Riley outlined his work with white pine and poplar. The full report is attached as Exhibit "B".

204. REPORT BY DR. SENN

Dr. Senn reported that scion material had been supplied to Dr. Heimburger, and pollen to tree breeders in California.

205. SPRUCE GALL APHID

Dr. de Gryse asked for information concerning an investigation started on the inherited susceptibility of spruce to the gall aphid. Dr. Heimburger informed the meeting that the cuttings taken had failed to survive. Dr. de Gryse suggested that the work be continued.

206. BIRCH DIE-BACK

Mr. Farrar drew attention of the Subcommittee to the fact that most of the birch in eastern North America were dead or dying, and urged that attention be given to finding a birch resistant to this unknown disease as soon as a tree breeder is available.

207. PROULX PLANTATIONS

Mr. Tunstell drew the attention of the Subcommittee to the existence of a large area of plantation on the limits of the Consolidated Paper Company near Grandmère. There are several strains of both Norway and white spruce, some of which are highly successful and worthy of the attention of a tree breeder.

208. The meeting adjourned at 4:30 P.M.

J. L. Farrar,
Secretary,

Ottawa,
December 1, 1947.

EXHIBIT "A"

Excerpt from the proceedings of the tenth meeting of the Executive of the Associate Committee on Forestry, held in Room 2121, National Research Building, Ottawa, 7. 10. 47

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8. Forest Tree Breeding (Min. 10, 9th Mtg.)

THE SECRETARY said that he had written to Mr. J.L. Farrar as requested for a review of the work to date under the Subcommittee on Forest Tree Breeding. He understood that a report was being prepared by Mr. Farrar but at the time of the meeting no report had been received.

The report by Mr. Farrar appeared in full in APPENDIX "D" of the Proceedings of the Tenth Meeting of the Executive of the Associate Committee on Forestry, 7 October, 1947.

THE CHAIRMAN said that he and the Secretary had met on the previous day with Dr. W. H. Cook, director of the Division of Applied Biology, of the National Research Council, who had some views as to the organization of work on forest tree breeding and related subjects. He invited Dr. Cook to present his ideas.

DR. W. H. COOK said that when the Review Committee of the National Research Council was examining the work of the several Associate Committees he had been asked to discuss the work on forest tree breeding which had been carried on in his Division in cooperation with the Associate Committee on Forestry. As members of the Committee knew a Subcommittee on Forest Tree Breeding had been established under the Associate Committee on Forestry and this Subcommittee had continued actively throughout the war whereas the parent Committee had remained dormant during this time. At the last meeting of the Subcommittee it had been suggested that this work should be given the status of an Associate Committee but in view of the revival of interest in the Associate Committee on Forestry it had been agreed that the work might be continued on a subcommittee basis. Dr. L.P.V. Johnson who had been a member of his Division had resigned to accept a position in Florida and subsequently it had been agreed that the work on forest tree breeding carried on under the auspices of the National Research Council should be transferred to the Dominion Forest Service on whose plots the tree breeding experiments were being carried on.

Under the Council's Committee on Assisted Research Grants, awards were made each year to science departments of the universities for the conduct of work at the graduate level in various fields of science. In recent years applications have been received for the

support of studies in the field of forest ecology and these applications were usually referred to his Division for appraisal. He thought it was important that studies in ecology should be supported and he suggested that a competent group of scientists should be selected by some organization to pass judgement on the applications received. It seemed to him that studies in forest ecology might rightfully be considered as coming within the scope of the Associate Committee on Forestry and he thought that the Subcommittee on Forest Tree Breeding might be enlarged by the appointment of further scientists from the universities and asked to review applications made to the Council for the support of graduate work in forest genetics and ecology. As an alternative the new committee might be created to carry on this work.

MR. MACDONALD thought the Subcommittee should be retained under the auspices of the Associate Committee on Forestry. Regarding the work on forest tree breeding under the Dominion Forest Service he said that it was progressing as well as could be expected and good results had been secured from the experimental work of the past ten years. It was a problem in which the provinces were also directly concerned and it was important that they should be represented in any discussions relating to formulation of policy on forest tree breeding and ecology.

MR. KOROLEFF said that the term forest tree breeding was not very clearly understood by industry. It could be practical as in Sweden where it is common usage in forest management to leave some of the best trees in order to maintain the quality of the forests. In Canada very little has been done in the regeneration of burned-over areas. Recently he had read of mechanical planting being done at a great saving over manual operations and with better results. Studies on tree breeding could also be combined with work on seed selection and other projects of a fundamental nature.

PROF. GIBSON stressed the importance of forest ecology studies as a function of the Committee's activities. He said work in ecology must be developed if silviculture is to be improved.

Considerable discussion ensued as to whether the name of the Subcommittee on Forest Tree Breeding should be changed so as to broaden the field of its activities. "Forest genetics and ecology" was one name proposed.

THE CHAIRMAN said it seemed to be agreed that a Subcommittee should be established under the Associate Committee to deal with fundamental studies and long-term problems of a scientific nature which were distinct from the more practical tasks such as fire protection and aerial forest surveys.

EXHIBIT "A-3"

The importance of biological studies in relation to forest yield was recognized and it was believed that investigations of this kind could quite properly be regarded as within the scope of the Associate Committee on Forestry. In dealing with this subject it would be necessary for the Committee to allocate a portion of its funds for the conduct of basic research. He suggested that the discussion at this meeting be brought to the attention of the Subcommittee on Forest Tree Breeding and that the Subcommittee be asked at its next meeting to consider the desirability of changing its name and revising its membership with a view of widening its field.

EXHIBIT "B"

Subcommittee on Forest Tree Breeding
National Research Council

Section V (Pathology) - C.G. Riley
Interim Report, 28 Nov. 1947

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

No examination of poplar breeding materials at the Petawawa Forest Experiment Station were made this year, owing to the absence of pathologists at this station in the latter part of the season.

It is believed, however, that sufficient observations have been made on most of these materials in former years, to provide some indication of their respective qualities of resistance or susceptibility to rust. To this end, all the data thus far accumulated have been consolidated, and now await final tabulation and analysis. An effort will be made to have this work completed in time for the next meeting of this Committee. In all, 608 lots of young trees have been examined tree by tree, one to three times per year, for up to seven years. The lots contain from one to several hundred trees, amounting in all, to many thousands of examinations.

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

The white pine breeding materials in the old disease garden at the National Research Council Annex were examined in May of this year, prior to their removel to the new site at Connaught Range. These materials comprised 46 lots totalling approximately 2,300 trees of which 259 trees representing 32 lots were infected with blister rust in various degrees of intensity. Fourteen lots remained free of readily visible symptoms, which should not be interpreted as necessarily indicating resistance to the disease. Some of the apparently healthy trees may have borne an early and inconspicuous stage of the disease, or their escape may have been accidental. This remains to be determined by further tests.

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