

COMPLIMENTARY

CONFIDENTIAL

Copy No. 19

NATIONAL RESEARCH COUNCIL OF CANADA

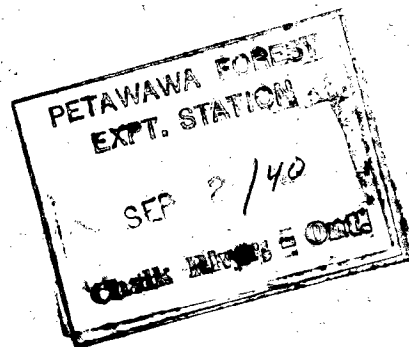
PROCEEDINGS

OF THE

FIRST MEETING

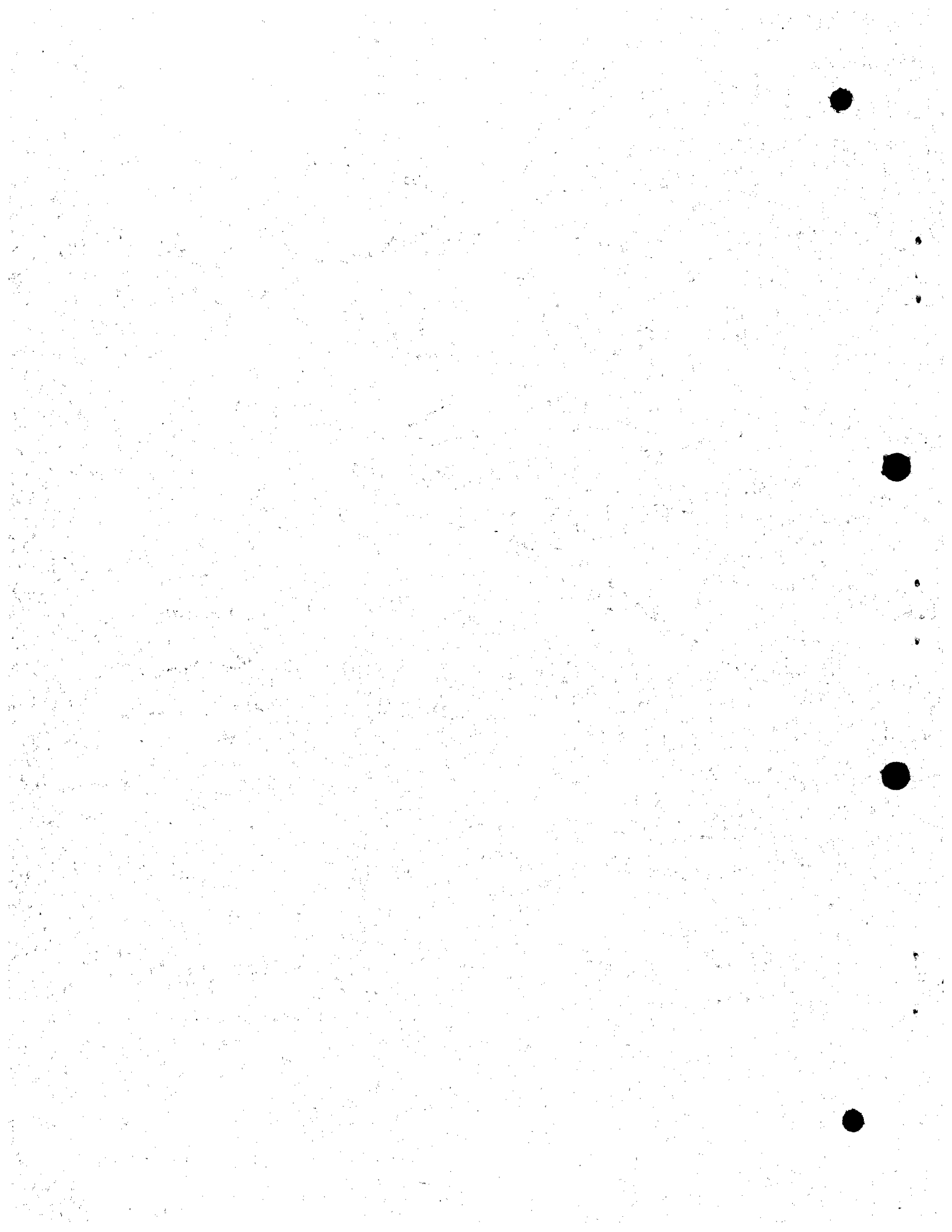
OF THE

SUBCOMMITTEE ON FOREST TREE BREEDING
ASSOCIATE COMMITTEE ON FORESTRY



PETAWAWA FOREST EXPERIMENT STATION

21 JUNE, 1939



CONFIDENTIAL

NATIONAL RESEARCH COUNCIL OF CANADA

PROCEEDINGS

OF THE

FIRST MEETING

OF THE

SUBCOMMITTEE ON FOREST TREE BREEDING
ASSOCIATE COMMITTEE ON FORESTRY

PETAWAWA FOREST EXPERIMENT STATION

21 JUNE, 1939

1950

REMANOVA FOREST RESEARCH STATION

21 JUNE, 1950

NATIONAL RESEARCH COUNCIL

P R O C E E D I N G S

of the

First Meeting

of the

SUBCOMMITTEE ON FOREST TREE BREEDING

Held at the Petawawa Forest Experiment Station,

11 a. m., Wednesday, 21 June, 1939.

Present:

Members: Dr. R. Newton (chairman)
Dr. C. E. Atwood
Mr. D. R. Cameron
Dr. N. H. Grace
Dr. C. Heimburger
Dr. L. P. V. Johnson
Mr. C. G. Riley
Dr. H. A. Senn
Dr. F. H. Peto (secretary)

Visitors: Mr. M. B. Morrison, Superintendent, Petawawa
Forest Experiment Station
Mr. W. M. Robertson, Dominion Forest Service
Mr. J. L. Farrar, Dominion Forest Service
Mr. E. C. Smith, Biological Laboratories, Harvard

-
- Organization** 1. The Chairman explained that the standing Subcommittee on Forest Tree Breeding was appointed under the Associate Committee on Forestry to continue the activities initiated by the informal "Conference on Forest Tree Breeding and Propagation".
- Minutes** 2. The minutes of the Sixth Conference on Forest Tree Breeding and Propagation were read and several points arising out of them discussed fully since these had a direct bearing on the business of the meeting.



Appointments
of Messrs.
Packman and
Benson

3. The committee confirmed authorization previously obtained from the members by telephone to employ Mr. R. A. Packman for three months, or if necessary 3 1/2 months, commencing 8 June, and Mr. Benson for one month. They are each to receive \$60.00 per month from a special vote authorized at the 126th meeting of the National Research Council. Mr. Packman will be employed in preparing and maintaining the new nursery at the Annex, Montreal Road, and Mr. Benson will assist Dr. Grace in his propagation studies on forest trees.

Nurseryman

4. It was agreed that a fully qualified nurseryman was urgently needed to care for the nurseries at Petawawa in the summer and that he could be most profitably employed in the winter on greenhouse duties in connection with the propagation studies being conducted by Dr. Grace and Mr. Farrar. Mr. Cameron agreed that the Dominion Forest Service should appoint a nurseryman as soon as possible in the laboratory assistant grade, which has a salary rate of \$95 to \$115 per month.

Progress
report on
Forest Tree
Breeding

5. Dr. Johnson, in outlining the progress made in forest tree breeding since the April meeting, dealt mainly with hybridization activities. Interspecific cross-pollinations were made in several genera involving several species in each genus, as follows:

elm,	5	species,	37	bags	with	average	of	15	flowers	each.
birch,	8	"	84	"	"	"	"	4	"	"
spruce,	5	"	123	"	"	"	"	4	cones	"
pine,	8	"	182	"	"	"	"	5	"	"

Concurrently with hybridization work, individuals of each species were self-pollinated and cross-pollinated inter se in order to study self sterility. The importance of self sterility in the hybridization of forest trees was discussed.

Germination results from seeds produced by cross-pollinated cones in spruce were relatively poor. Seedlings were produced in crosses of black spruce with each of the species, white, red and Norway spruce.



In discussing future plans, Dr. Johnson brought up the matter of "forest arboreta", i. e., areas about 100 feet square planted to native selections, introductions or hybrids for the purpose of testing forest form and general characteristics of growth and quality. He suggested that both the new Annex property and the Petawawa reserve be used, according to site, for this purpose.

Progress
report on
propagation
studies

6. It was reported by Dr. Grace that some 30,000 cuttings of spruces, pines, maple, elm, birch, basswood and poplar have been planted this spring. Periodic collections throughout the year should establish the variation in rooting and indicate optimum periods. Recent experiments emphasize the importance of small amounts of nutrient salts in the sand; rooting and top growth of Norway spruce cuttings have been very significantly affected in this manner. Mr. Farrar reported 90% rooting of December cuttings of Norway spruce at New Haven.

A complete survey of the problems involved in the project on propagation was presented. This indicated topics receiving some attention and those to be stressed this season. This survey will be considered by the special committee on plans and attached to their report.

It was decided to concentrate the work as much as possible on the study of our native species of tree rather than on exotics.

Tree disease
studies

7. Mr. Riley stated that he was prepared to commence tests this summer on the resistance of poplar species and hybrids to canker, heart rot, leaf and twig diseases. Dr. Johnson agreed to supply him with any material which had reached the necessary stage of development.

Dr. Heimburger referred to leaf rust in poplars and suggested that Mr. Riley might have the opportunity this summer to obtain information on the degree of natural resistance or susceptibility in the poplars available at Petawawa.



Resistance
to white
pine blister
rust

8. Mr. Cameron stated that definite steps should now be taken to determine the degree of natural resistance to blister rust present in our native white pines. He recommended that Mr. K. M. Mayall, who is conducting a special study on forest succession for the Associate Committee on Forestry, should be asked to make careful observations on infected stands of white pine in the hope that highly resistant individuals will be discovered. The Secretary was instructed to pass this recommendation on to Mr. S. J. Cook, secretary of the Associate Committee on Forestry.

The Secretary reported that Dr. A. J. Ricker of the University of Wisconsin, Madison, had discovered a population of white pine segregating for resistance to blister rust. Dr. Ricker has promised to collect seed from the parental trees and send them to us for testing in the disease garden.

Mr. Morrison agreed to ask his staff to be on the lookout for natural resistance to blister rust.

Resistance
to the
bronze birch
borer

9. Dr. Atwood suggested that Mr. Mayall be asked to make observations on the damage done by the bronze birch borer to white birch, yellow birch and poplar with the object of detecting natural resistance. It was agreed that the Secretary should forward this request to Mr. S. J. Cook.

Woodlot test
areas at the
Annex

10. The Secretary described the new Annex property on the Montreal Road. Three distinct types of sites are found in this area which are characteristic of a great deal of typical woodlot property in Ontario. The National Research Council are willing to have any property which will not be required for building or nursery sites developed as a regional test area for forest trees to supplement tests conducted at Petawawa and other stations. The committee agreed this area should be developed and Mr. Cameron suggested that arrangements be made for a unit of the National Forestry Programme to be located on the area next year to prepare it for planting. Mr. Cameron and members of his staff agreed to inspect the area carefully this summer.



Disease
garden

11. The Secretary pointed out that the white pine blister rust disease garden could be suitably located on the Annex property since there are no pine stands in the vicinity and there is sufficient land under cultivation to meet all the anticipated requirements. The danger of locating the disease garden at the Petawawa Forest Experiment Station was emphasized by several of the members. However, the decision to locate the garden at the Annex means that susceptible white pines could not be grown anywhere in the area other than in the disease garden where elimination by the disease would form the basis of selection. It was agreed that the main tests on white pine should be conducted at Petawawa and that the white pine blister rust disease garden should be located at the Annex.

Dr. Heimburger stated that a number of Ribes species had been grown at Petawawa during the past year and will be available to plant at the Annex disease garden as alternate host plants for the blister rust organism. He also reported that certain species of Ribes are already prevalent on the Annex property.

Annex
nursery

12. The Secretary stated that about five acres of land were under cultivation at the Annex. Part of this will be available for propagation studies and initial transplants of parental species and hybrids. This nursery should be of particular value for less hardy material or seedlings on which cytogenetic studies will be necessary.

Annex
greenhouse

13. The Secretary stated that the Research Council was considering erecting a greenhouse on the Annex property to provide extra space for propagation and cytogenetic studies.

Mr. Cameron agreed that a greenhouse should be constructed at the Annex, especially since it was not feasible at present to construct one at Petawawa. The ready accessibility of light, heat and water services plus the proximity to nursery, disease garden and woodlot test areas were the main points influencing the decision of the meeting in favour of the Annex site.



Project Organization 14. The outline of project organization prepared by Dr. Johnson and included in Appendix A of the "Sixth Conference on Forest Tree Breeding and Propagation" was discussed at length by the meeting.

The Chairman suggested that the following main headings should be added to those suggested: V Tree diseases; VI Insect pests; VII Wood quality tests; VIII Physiology.

It was agreed that a plan such as suggested by Dr. Johnson would aid in carrying out a logical and comprehensive programme. It was further agreed that the outline should be drafted in detail by a special committee and that it should be amplified or amended when necessary at subsequent meetings of the Subcommittee on Forest Tree Breeding.

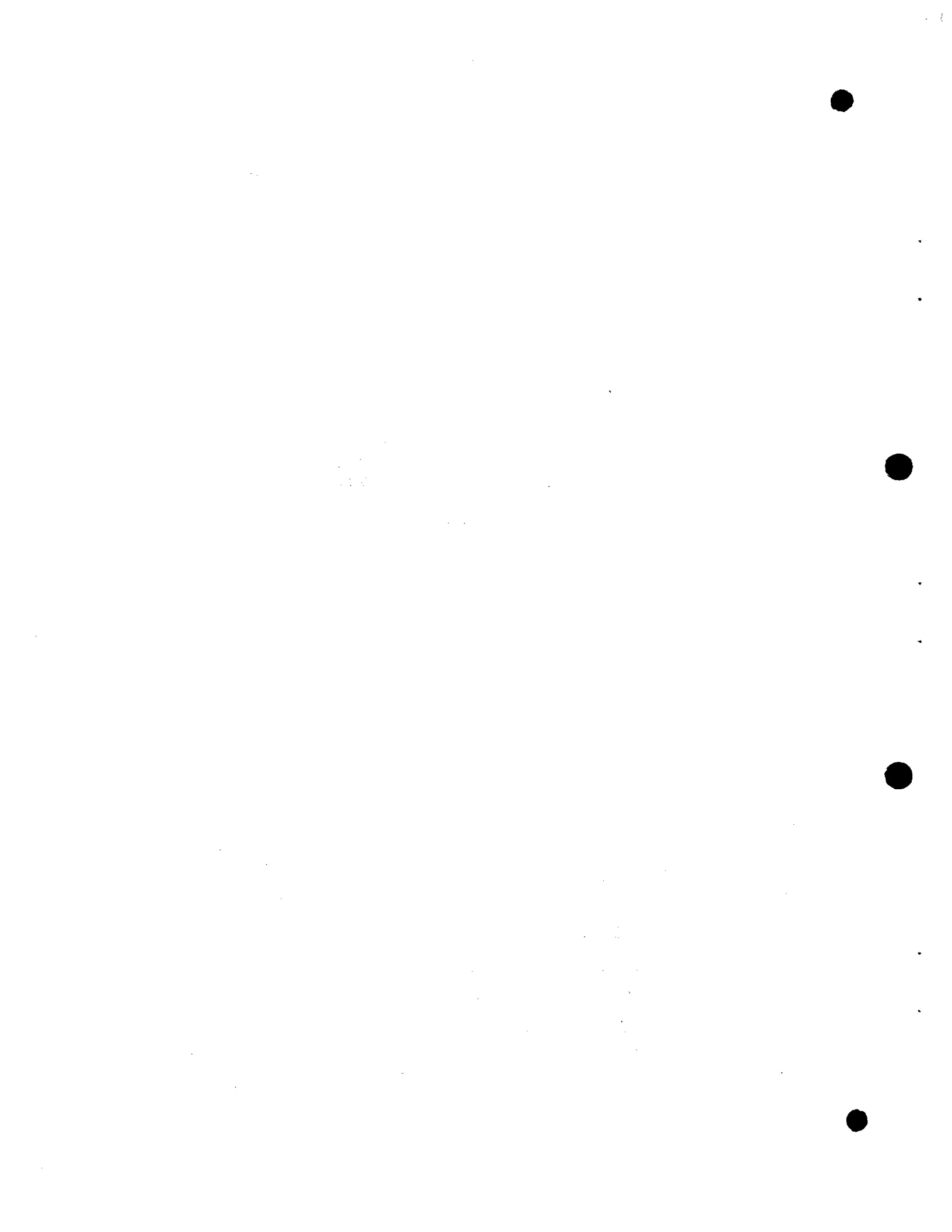
It was suggested by the Chairman that individual project reports should be prepared by the workers concerned and submitted to the Secretary to be included as appendices to the minutes of future meetings.

The following persons were asked to act on the special committee to draft the outline:

Breeding	- Dr. Johnson
Cytology	- Dr. Peto
Plant accession	- Dr. Heimbürger
Propagation	- Mr. Farrar
Tree diseases	- Mr. Riley
Insect pests	- Dr. Atwood
Wood quality	- Dr. Peto
Physiology	- Dr. Grace

Wood quality tests.

15. The Secretary reported on a conference he had on 25 May with Dr. Johnston of the Pulp and Paper Research Institute, Montreal, regarding wood quality tests of poplar hybrids and parental species. Pulping tests appeared not to be necessary at present but Mr. Johnston agreed to test samples from one P. grandidentata tree and one P. alba - P. grandidentata natural hybrid. In carrying out complete pulping tests on these two trees, they would determine the labour involved and obtain a rough indication as to the direction in which the hybrids may differ from P. grandidentata. For the remainder of the material to be tested, it was suggested that 1/2" borings be taken, and density, fibre dimension, cellulose and pentosane content be determined.



At subsequent conversations with Mr. McElhanney and Mr. Hale of the Forest Products Laboratories, Ottawa, it was suggested that perhaps the chemical tests for cellulose and pentosane would not be essential at present. Mr. Hale was prepared to run the remaining tests for us but we have no one at present experienced in making these chemical determinations.

There was considerable discussion on this report, particularly on the best method of obtaining samples without severe damage to the tree. Since there were some objections to the use of the large 1/2" borer, it was agreed that Dr. Johnson should experiment this summer on the best method of taking samples. It was also arranged that Dr. Johnson should procure the samples of the two trees for pulping tests in Montreal.

Dr. Heimbürger's investigations

16. Dr. Heimbürger described his studies on nursery propagation and forest plantation methods, strain testing in Scotch pine and spruce, and taxonomic studies on poplar.

He also reported that the International Paper Company, Three Rivers, P. Q., received 400 poplar cuttings to test on their property. The company agreed to allow access to this test area at all times to our investigators to take data on development of the hybrids.

Propagation frames

17. There was considerable discussion on the most suitable type of propagation frame. Dr. Heimbürger described a type of concrete frame that he thought would meet requirements. Mr. Morrison stated that material had been ordered for four new wooden frames with open sides which should meet the requirements for transplant frames. It was agreed that a sample concrete frame should also be constructed this summer and that a definite decision on the most suitable type would be deferred until these experimental types could be constructed and tested.



Visit to
Western
Canada by
Dr. Johnson

18. Dr. Johnson explained the desirability of visiting various experimental stations in Western Canada to gather information which would be of value in the breeding of trees suitable for shelter belts. The meeting agreed that this phase of the research should receive greater emphasis and such a trip would be worth while.

The Chairman pointed out that the committee had no funds available to permit a trip being taken this summer and that additional funds could not be voted until the September meeting of the Council.

Heart rot
of poplar

19. Mr. Riley raised the question as to whether heart rot will be a serious disease in rapid growing poplar hybrids on well managed stands where the trees are cut in 15 to 20 years.

Dr. Heimburger was of the opinion that the disease might not be serious in fertile, rapid growing, well managed stands but on poor sites where development was slow in spite of inherent vigour he thought that the disease might be serious.

The meeting adjourned at 4 p.m., when members proceeded to inspect No. 1 and No. 2 Nurseries under the guidance of local staff.



INITIAL DISTRIBUTION LISTCopy No.

1. Dr. R. Newton (chairman)
2. Dr. C. E. Atwood
3. Mr. D. Roy Cameron
4. Dr. N. H. Grace
5. Dr. C. Heimburger
6. Dr. L. P. V. Johnson
7. Mr. C. G. Riley
8. Dr. H. A. Senn
9. Dr. F. H. Peto (secretary)
10. Major General A. G. L. McNaughton
11. Mr. S. P. Eagleson
12. Mr. S. J. Cook (Board Room copy)
13. Dr. J. M. Swaine
14. Mr. J. L. Farrar
15. Mr. M. B. Morrison
16. Mr. W. M. Robertson
- 17 - 20 Reserve copies



