

Minutes of the Third Conference  
on Forest Tree Breeding and Pro-  
pagation held at the Forest Experiment  
Station, Petawawa, on 1 July, 1938,  
at 9 p.m.

Present: Dr. R. Newton (chairman), Mr. J. L. Farrar,  
Dr. N. H. Grace, Dr. C. Heimburger, Dr.  
L. P. V. Johnson, Mr. M. F. Riley, Dr. F. H.  
Peto (secretary).

Report on  
tree  
breeding

26. Dr. Johnson briefly reviewed the progress to date  
in hybridizing poplars, spruce and pine. The details  
of the results are given in current progress reports.

Methods of  
producing  
F<sub>1</sub> hybrid  
seed

27. Dr. Johnson indicated the possibility of hormone  
methods of propagation by stem cutting not being  
commercially practical. In case this proves to be  
the case, various alternative methods of producing  
F<sub>1</sub> hybrid stock from seed were discussed. The conifers  
are ~~usually~~ <sup>usually</sup> monoecious but 2 Norway spruce and 1 white  
pine tree were found which were entirely female. This  
observation points to the possibility of growing planta-  
tions of such female trees interspersed with trees of  
the species which is to be used as the male parent.  
Such a seed plantation should yield a perpetual and  
uniform supply of hybrid seed and in this way it would  
not be necessary to depend on stem propagation by hormone  
to take advantage of hybrid vigour and the superiority of  
the F<sub>1</sub> over succeeding segregating generations. It was  
also pointed out that grafting, artificial pollination,  
etc., might be helpful in such a project. It was agreed  
that preliminary steps in this direction should be taken  
immediately.

Dr. Heimburger gave an example of hybrid seed  
production in Europe where an avenue of Japanese larch  
was growing adjacent to European larch. The hybrid seeds  
could be selected on the basis of seed colour and con-  
sequently these trees proved to be an excellent source of  
hybrid seed.

*seedling*

Disease  
garden

28. The secretary emphasized the necessity of an early establishment of a disease garden, since it will be particularly essential in studies on white pine blister rust. Crosses have been made this year between Pinus peuce and native white pine in the hope that the reputedly resistant characters of the former parent would be partially dominant. A thorough test of the resistance of the resulting seedlings will have to be made. In addition, the variability in resistance of our native white pines is unknown and it was agreed that extensive collection of a wide range of biotypes should be made as soon as possible. Seed collections from healthy seed trees in areas heavily attacked with blister rust should be made.

After considerable discussion, it was agreed that a disease garden should be established and that artificial plantations of Ribes should be established in this garden to ensure the infection of all nursery stock with white pine blister rust. In this way, resistance in seedling pines should be apparent in the very early stages and should give information of considerable value in the control of this disease.

Hormone  
studies

29. Mr. Farrar outlined the progress to date in the treatment of stem cuttings of conifers to induce rooting. Details of this work are to be found in current progress reports. In general, the results are encouraging and it was agreed that the plan of attack on this problem is giving satisfactory results.

There was considerable discussion on the report from Harvard that they were able to obtain 90 - 100% of rooting in stem cuttings from very young seedling. Methods of forcing young trees by nutritional and cultural methods were discussed in the hope that it will be possible to duplicate the Harvard results in older material so that results of practical importance can be obtained.

Arrangements during Mr. Farrar's absence 30. Mr. Farrar will be leaving in the autumn to take graduate work and it was arranged that one of Dr. Grace's assistants would carry on his work on the propagation studies during his absence.

Nursery policy 31. Dr. Heimbürger outlined the nursery policy which they hoped to initiate at Petawawa, which includes performance tests of white spruce from all over Canada as well as tests of 5-needle pines of Himalayan, Japanese and Balkan species.

Testing hybrid poplars for canker 32. Mr. Riley stated that he would be able to carry out a limited program this summer on testing the reaction of certain hybrid poplars to poplar canker. Dr. Heimbürger explained that he had certain hybrids which he was very anxious to have tested this year and arrangements to have this done were made.

The meeting adjourned at 11.30 p.m.

## RESOLUTIONS

Greenhouse  
at Petawawa

1. It was agreed that a greenhouse should be constructed at Petawawa since it would facilitate research in breeding, hormone propagation and pathological studies. Dr. Johnson explained that rough estimates and plans had been drawn up and that the approximate cost would be in the neighborhood of \$5,000.

Nursery  
man

2. It was agreed that there was a great need for an experienced nursery man at Petawawa. There will be a rapid increase in the amount of material to be handled in the nursery from both the breeding and propagation studies, and it was suggested that, if at all possible, an experienced nursery man should be hired next spring.

Visit to  
St. Williams

3. The advisability of having Dr. Johnson visit commercial and government nurseries was discussed and it was agreed that a visit by him at least to St. Williams would be most helpful since it was felt that careful organization of nursery work at this time was of particular importance.

Laboratory  
and field  
assistant

4. It was agreed that it would be very helpful if a permanent laboratory and field assistant to Dr. Johnson could be hired. This is particularly important since it is necessary for Dr. Johnson to make frequent field trips to collect material and in his absence it is essential to have a permanent, well-trained assistant at Petawawa. In addition, during the actual breeding season, the program at Petawawa requires two workers.

Spring and  
autumn  
activities

5. It was pointed out that this spring the activities at Petawawa were not started soon enough and it was agreed that in the future, arrangements to commence work as early as 1st April should be made. It was also pointed out that 5 labourers will normally be required to handle the extra spring and autumn rush of nursery and propagation work.

Disease  
garden

6. It was agreed that a disease garden should be established (Minute 28), and a visit on 2 July was made to Thomas field and it was agreed that the highlands on this field would be well suited for a disease garden since there are relatively few white pines in the actual and closely adjacent areas. It was agreed that Dr. Heinburger should commence the collection of Ribes species to be started in the nursery this year and to be transplanted to the disease garden in 1939. It was also agreed that collections of white pine seed from a wide range of localities should be made as soon as possible. This seed will be started in the nursery and at 2 years of age will be placed in the disease garden. It is not anticipated that a great amount of labour will be required to put Thomas' field in shape for the disease garden.

Sub-test  
plantations

7. It was pointed out that it will not be possible to test adequately all the hybrid progeny produced under nursery conditions. Consequently, it was agreed that only a relatively few selected strains will be replicated and thoroughly tested under control conditions. The bulk of the hybrid material must therefore be planted out under natural conditions. By annual observations on such material, it should be possible to eliminate a large proportion of ill-adapted and non-hardy progeny at very low cost. To make the most out of this system of breeding, it will be necessary to have sub-test areas on a wide range of site-types. Informal discussions with representatives of the Ontario Forestry Department indicate that they might be willing to provide certain areas for this purpose and, in addition, offers have been received from private owners to utilize portions of their wood-lots for testing purposes. Mr. Billings at Billings Bridge has a very fine wood-lot on <sup>heavy</sup> alluvial soil and would permit us to put out material for test on this area, part of which has been just cut over, and would be willing to give us a satisfactory, written agreement covering at least 10 years, which would safeguard our interests. It was agreed that careful consideration should be given by the authorities to suitable arrangements for adequate test areas.