

Report on Forest Research for the Year Ending March, 1951

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From its foundation after World War I, the British Forestry Commission has regarded research and experiment as an integral part of its programme. Research in timber and forest produce is carried out by the very fine Forest Products Research Laboratory at Princes Risborough. This is under the aegis of the Department of Scientific and Industrial Research but works in close co-operation with the Commission. Up to 1929 the Commission itself was restricted to research

directed to an immediate economic result in relation to forestry, but since then it has financed research of a more fundamental nature—mainly by means of grants to Universities and kindred institutions for specific research projects. To date 1.6 per cent of the total expenditure of the Commission has been spent on research.

The White Paper, Post War Forest Policy (1945), recognised that the problems of British forestry called for a considerable expansion of the Research organisation. A central Research Station was opened in 1946 at Alice Holt and staff and facilities have been built up steadily since then. Expenditure on research in 1950 at £130,000 was little short of the total for the decade 1930-'39. The results are now becoming evident and this publication is the third (and at 139 pages the largest) of a new annual series summarising the work in progress in this field.

Part I, 112 pages, is devoted to the work carried out by the Commission's own staff. This includes work on tree seeds, provenance and genetics, nurseries, afforestation methods, mixtures, rates of growth and yield, pathology, and mechanisation. Part II deals with work done by outside Institutions. It includes investigations on nutritional and sterilization problems in nurseries; on soil mycology, soil fauna, physical and chemical properties and profile changes; botanical variations in larch species and in Sitka spruce.

It will be appreciated that work is now under way on every aspect of forestry, but it must be admitted that as yet many of the projects are still in the preliminary stages and it will be some time before results which can be applied with confidence in the forest are available. Many of the projects are of their nature long term and it takes some years to train staff in methods and routine for new lines. It is therefore unfair to expect definite recommendations at such an early stage. However, it is evident that real progress is being made and already some interesting and valuable facts have emerged. In the following paragraphs a few points from the report are briefly mentioned but they are not to be taken as either exhaustive or representative.

Tree Seeds: Viability tests of home collected seeds indicate very wide variations in seed quality and suggest the advisability of a test *before* large scale collection. Combined with rapid viability estimates based on the new embryo colour staining technique, this work promises an early return in better and more economical seed collection.

Experiments on soaking seed for from one to thirty days before sowing have shown no advantage with Sitka and Norway spruce, Japanese larch and Scots pine.

Nursery: Laying down to grass-clover for two years had little or no beneficial effect on the growth of Sitka seedlings in a "conifer sick" nursery. This calls into question a method of "resting" nurseries on which considerable reliance has been placed here. On the other hand, acidification of Sitka-sick nurseries has given a very good response, Sitka one year seedlings being 2.5 inches high. On alkaline or neutral soils ammonium sulphate acts both as a manure and an acidifier.

Tests have confirmed the marked superiority of suitable grits over soil for covering small-seeded conifers, *e.g.*, Sitka.

Very promising results in weed control in seed beds have been obtained with light mineral oil sprays. Extended trials are being planned.

Altogether nursery research is proving very fruitful and it has already modified very considerably the traditional nursery methods.

Natural Regeneration of Scots Pine in the Highlands: Although this subject has been under investigation for 20 years, results are disappointing and it is now feared that nature, having been obstructed so ruthlessly during the past century, may be unable to effect regeneration unaided. Grazing and burnings have caused the development of a tough, felted raw humus layer, thus increasing swampiness, peat development and general soil deterioration. To reverse this process and re-establish thriving pine woods will not be easy.

Provenance: Only very tentative conclusions can be drawn from the work to date but there appears to be substance in the belief that Alpine larch provenances are unsuited to the British climate, being very liable to canker and die-back.

Afforestation: Useful experiments have been laid down to test out the best species and mixtures for difficult sites. Scattered individuals of a number of more exacting species are being tried in a matrix of the expected safest species—usually Sitka or *Pinus contorta*. By heavy phosphatic manuring of the exacting individuals it is hoped to produce a mixed crop of uniform growth.

Oak-larch Mixtures: In view of the many plantations consisting of hardwood groups in a conifer matrix laid down in Ireland under Dr. M. L. Anderson's direction, readers will be interested in the study of oak-larch mixtures. The larch is consistently the faster grower and it seems clear that the full beneficial effects of larch shelter are becoming apparent only in the pole stage. The zones of rooting of the two species are found to be quite different. There is an interesting discussion on the number and spacing of oak in the groups, spacing of groups and use of alternate strips of oak and larch.

Derelict Woodlands: Investigations are directed to finding economical methods of bringing scrubland back into commercial production. Clearance of 12-ft. strips leaving up to 10-ft. strips of hazel scrub under which the brush is piled appears to have advantages and careful comparative costings are being made.

Shade and Beech Growth: Investigations suggest that height increment of beech at light intensities as low as 20-25 per cent is not inferior to growth in the open. Light under a closed canopy of mature beech can be as low as 2 per cent.

Diseases: A very interesting account of the life cycle of the spruce aphid, *Neomyzaphis abietinae*, is given. No male has ever been recorded nor is there any evidence of the existence of an egg stage. Propagation

is entirely by the production of living young and may continue through mild winter weather. It is calculated that in a favourable season the potential reproduction of a single aphid would be 430 millions. Fortunately natural controls intervene !

Heather in Checked Plantations: Screefing the heather (*Calluna*) has had a remarkable effect in the second year, Sitka showing a marked recovery from chlorosis with a higher nitrogen content in the needles. Apparently there is severe competition for the available nitrogen but details of cause and effect have still to be worked out.

It is hoped that the few points noticed in this review will encourage every forest officer to secure a copy of this valuable and stimulating publication. It is written with the minimum of technical statistics and jargon so that the non-specialist forester can derive the maximum of benefit and information without resort to "wet towel" methods of study.

T.McE.
