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Probably one of the most useful functions of the Society's Journal is to keep members abreast of forestry developments in other countries. In this belief it is the intention to devote considerable space in future issues to reviews of forest publications from all parts of the world, to summaries of progress in particular aspects of silvicultural technique and research, and generally to provide an up-to-date forest news service.

As a step in this direction this editorial is given over to some comments on British Forestry which were evoked by attendance at the Commonwealth Forestry Conference held in Britain in June and July, 1947. In view of the essential similarity of the afforestation problem there and here, members will no doubt be interested in comparing methods and results.

In both countries State intervention in forestry can be said to date from the early years of this century but no substantial progress had been made prior to the first World War. The Acland Report of 1917 recommending the setting up of a permanent forest authority — the Forestry Commission—with a definite programme of afforestation applied to Ireland as well as Britain, and a start had actually been made before the Anglo-Irish Treaty of 1921 was ratified. That year marks the parting of the ways, and divergences in policy and methods date from that time.

Our first impression of the English countryside was gained when the Dakota, beginning its descent towards Northolt, pierced a layer of dense cumulus cloud. The country west of Harrow came into view and it was a surprise and a pleasure to see that, by and large, the ravages of war were so insignificant. It was immediately apparent that, even in the neighbourhood of a great metropolis, the hedgerow and park trees and spinneys, which are so much a part of English scenery, had not suffered in a fuel crisis such as we had experienced. The domestic coal ration continued right through the war and labour could not be spared for the tedious conversion of rough timber into firewood blocks. The contrast in the matter of fuel was perhaps best epitomised by the attractive display in an Oxford coal-merchant's window of 6-inch, handy, seasoned,

split firewood blocks at a very reasonable price. This at a time when Eire was suffering a fuel scare!

But, if the hand of war passed lightly over the scattered firewood trees, it fell heavily on the commercial woods. The large conifer blocks especially were clear cut and this wholesale clearance was particularly evident in eastern Scotland where once the sombre green of massed Scots Pine was such a scenic feature.

Here again the severe shortage of labour and the scarcity of trained foresters to supervise fellings was evident. Work had to be concentrated as far as possible and maximum output obtained. Whereas in Eire it was possible to arrange, in Forestry Act inspections, to retain marginal screens, shelterbelts and scattered seed trees and to preserve immature stands, in Britain such discrimination was impossible. So desperate was the position that at one stage the very fine Corsican and Scots plantations, established only 20 to 25 years ago by the Forestry Commission in East Anglia, were in danger of the axe. They were finally saved by a compromise which has since been elevated almost to the status of a scientific principle of thinning. This consisted in the complete removal of every third line with normal thinning of the other lines—or variations on this theme. This system had two important advantages; one, that on the flat sandy soils of the Breckland lorries could travel along the newly-made alleys so that extraction was done with great economy in cost and—even more important at the time—in labour; two, the yield in thinnings worked out at 40 per cent. or more of the entire crop, a figure which met the requirements of the Timber Control. When we examined these plantations we found they had made a remarkably rapid recovery from this severe treatment. This was especially true of the better Corsican stands which initially had a high proportion of straight stems. In the poorer Scots stands with many defective stems recovery was slower and the removal of one line in six appears to be the most that can be safely undertaken. While these methods of thinning are not of general application here, they do point to the practicability—and perhaps even the desirability—of heavier grades of thinning than are customary in young stands.

Before leaving East Anglia with its concentration of some 50,000 acres of young pine plantations, a word of praise is due for the excellent fire fighting arrangements and equipment and for the very close utilization of thinnings.

Normally twenty year old pine poles are a drug on the market—poor firewood, not durable enough for fencing, too ugly for rustic work, unfavoured as pit props. But in East Anglia nothing is wasted. Material over 8 inches diameter

is classed as saw timber; from 3½-8 inches diameter is pit-wood; from 1½ to 3½ inches is pulpwood. The market for this small size pulpwood holds for all conifer species. The material is sold from a central dump at 50 shillings per ton to a London fibre-board factory which has 300 employees and is dependent on this source of supply for some 75% of its raw material.

The very dry climate of East Anglia with a rainfall of only 20-22 inches, the large blocks of young pines interspersed with heath, and the exceptional war-time risks from incendiaries, troop encampments and other sources combined to force the pace in fire protection. As a result it is now the most advanced forest district in this respect in Britain. There is a net-work of fire-towers and static water tanks; heavy Bren gun carriers, capable of negotiating most obstacles, have been converted into fire engines carrying 300 gallons of water and a rotary pump; Jeeps and lorries rush men and equipment to an outbreak. Tractor-ploughed fire lines break up the forest.

By way of contrast with the heath pine plantations, we saw on the Scottish border a great aggregation of spruce forest. In the counties of Northumberland, Cumberland, Dumfriesshire and Roxburghshire an area of 160,000 acres has been acquired by the Commission and about 50,000 acres have been planted to date. Rainfall on the higher ground reaches a maximum of 75 inches; the peats and heavy clay soils with *Molinia* as the dominant plant indicate spruce conditions and Sitka dominates the scene. Although these rolling hills are comparatively fertile, the land was held in sheep farms averaging well over a thousand acres each and population is sparse. Compared with Irish conditions acquisition appears to have been easy. In fact the Commission's first worry was to get enough men to work the forest and a housing scheme had to be put into operation from the start. Here were pointed out the sites set aside for seven forest villages of the future and for the town which would serve them with secondary schools and other urban facilities.

Only a very small proportion of the planted area has reached the thinning stage but the construction of a forest road system is well under way. Throughout the entire Border district tractor ploughing is now routine preparation for planting and the results in cheap and rapid establishment have fully justified the method. More of this anon.

Travelling north to Inverness, capital of the Highlands, delegates studied the afforestation of the Culbin sand dunes on the East Scottish coast. The situation is too far north for Maritime Pine but Corsican does well and the crop is very promising. Exposure, of course, is not to be compared

with our west coast.

A visit to the Lon Mor experimental forest at the head of Loch Ness served as a review of the progress of afforestation technique in the past quarter century. Back in 1925 this great basin-shaped depression in the Inverness hills was chosen as, if anything, a worse than typical example of Highland bog—Lon Mor is Gaelic for Great Waste. It contains peat-bog with a depth of as much as twelve feet, peat-clad schist ridges and peat-covered moraine. Except for a few *Molinia* flushes *Scirpus*, Cross-leaves Heath, *Sphagnum* and sickly sparse heather (*Calluna*) covered everything. This was the site chosen for the trial of a wide variety of species and of methods of establishment. In this and in several other research forests were carried out the experiments which to-day form the basis of British afforestation routine. The cost of the Research Branch works out at about 2% of the Commission's expenditure and no outlay has produced fruit more abundantly. No doctrine is as dangerous as that which says that forestry cannot afford research. An industry which has to do with factors of soil, climate and species which are as yet only dimly perceived cannot afford to do without research.

As work proceeded turfing by hand gave way to mechanical preparation by ploughs drawn by caterpillar tractors. Methods are now more or less standardised, but several plough types are in use and further developments in the direction of integrating plough and tractor may be expected. To explain the work: the plough turns out a continuous inverted sod which is pushed about two feet from the edge of the furrow and the ploughing is repeated at five feet intervals. Planting is done cheaply by notching into the upturned sods. The depth of ploughing varies from a few inches up to 18 to 20 inches in extreme cases. It was a revelation to study the beneficial effects of this treatment on the establishment of plantations. Soils very similar to those on which we have "burned our fingers" with Sitka and have had to replace with *Contorta* are taking Sitka with little initial check. Efficient drainage, aeration and the temporary elimination of competing surface vegetation appear to be the important factors.

This discussion brings into relief the fundamental divergence in the development of afforestation technique in Ireland and Britain. On the other side the forester attempts to improve his soil to take such species as Sitka, Douglas and Scots. Here the tendency is to suit the species to the soil with no more preparation than hand-turfing and draining. The result is probably best reflected in the relative use of *Pinus Contorta* — the last resort of the forester for the poorest soils. This species must form the

bulk of the 20% of "Pines other than Scots and Corsican" which have been used here in recent years. The Forestry Commission on the other hand use only a very small proportion—in 1937 it worked out at less than 2%.

This species has been in use in large-scale afforestation for only 23 years but we have no reason to be dissatisfied with it to date. In fact there is evidence that our stands are more advanced and growing more vigorously than their Scottish counterparts. The Scottish stands are not markedly faster in growth than Scots Pine. Part at least of the explanation seems to be in the choice of strain. This species has an enormously wide range from sea level to nearly 11,000 feet elevation on the Pacific Coast; and there is a corresponding wide variety of "races," some from the higher Sierras being given by some botanists the separate specific title of *Pinus murrayana*. We appear to have been using much seed collected from the lower part of its range and the resulting plants are more vigorous, denser in foliage and more spreading in crown than the mountain types apparently favoured by the Forestry Commission.

To return from this interesting digression to the subject of mechanical ground preparation, it may be remarked that the system is not without its risks—risk of windfall owing to the constriction of the root system into a five-part band, and risk that the promise of rapid early growth may end in stagnation in the thicket or small pole stage. The latter danger is more immediate when a species inherently unsuited to the site is used. The special treatment may cloak temporarily this incompatibility, but when canopy is closed and the crop is making its maximum demands on the soil, it may show up. Obviously the danger lies in over-optimistic selection of species and the method should not be condemned for its potential risks.

The other main point of divergence is in the use of manures in planting on poor peat soils. After many years of trial it has become obvious that the significant mineral deficiency is in phosphate. But the addition of this mineral, usually as basic slag or ground phosphate, does more than make good a deficiency; it sets in motion reactions as yet obscure which cause a break-down of raw peat and which enable the appropriate mycorrhizal associations to be formed. Particularly with Sitka, it eliminates the planting check and enables the crop to overcome competing vegetation and form an early canopy. On marginal spruce types the practice seems fully justified. At the Lon Mor we saw one instance of the remarkable effect of basic slag applied to *Pinus Contorta*, planted in 1926 on an exposed and very infertile peaty ridge. While the unslagged plants were only about five feet high and making little headway, the slagged

plants averaged over twenty feet and were very vigorous. It has been noted that while the effect of phosphates appears to be more or less permanent in the case of pines, this is not so with spruce on the worst peats.

To sum up the results of manurial experiments, we cannot do better than quote the official attitude in the early days: "An ounce of patience is worth a ton of slag." It is now customary to transpose "patience" and "slag" in that statement.

There is one side of the work of forestry in which Irish foresters seem to come out favourably in any comparison. In thinning our foresters gained much experience in the vital war years at a time when their British conferees were hampered by many difficulties. The Commission's staff are only now coming to grips with this problem and appear still somewhat hesitant in their approach. One feels, however, that, as in establishment technique, the excellent work on thinning grades and methods done by the Research Branch will soon bear fruit when the knowledge gained by it is diffused through the service.

One rather disturbing feature of the Commission's afforestation work was the almost universal use of conifers in pure blocks. It is unfortunate, but a fact, that most of the land acquired is not good enough for the commercial production of hardwoods such as oak, ash, chestnut and beech. But it seems a pity that on vast areas of poor soils the magnificent pioneer character of the humble native birch should be neglected. It is too easy to condemn sheep-grazing and moor-burning as the causes of soil deterioration and at the same time plant conifers in the bland and baseless assumption that all forests improve the soil. It is the duty of every generation of foresters to protect and increase the fertility of the soil, and ecological studies point to the birch as the natural and most economical weapon in the fight against raw humus and podsolisation. It was hardly encouraging to have our attention drawn in the caption of a photograph in the Conference Tours Booklet to the girdling of a small group of birch on a moor prepared for turf planting. What of the "silvicultural scream"?

It would be ungracious to conclude this brief commentary without paying a tribute to the Forestry Commission. We cannot do better than subscribe again to the Report of the Committee on British Forestry: that we were impressed with the courageous effort being made not only to restore the British woodlands devastated during two world wars, but also to provide for a large part of her anticipated future requirements; and that we considered the Forestry Commission well equipped for the task of completing the afforestation programme which it had

recommended. Finally, mention must be made of the excellence of the arrangements, the courtesies extended to us on all sides and the comradeship and warm hospitality of British foresters which will long be remembered by all overseas delegates.

EXTRACTION OF CONIFER SEED AT AVONDALE, CO. WICKLOW

By A. J. HANAHOE

In most countries to-day the aftermath of war with its consequent depletion of timber supplies has resulted in increased afforestation schemes. As in the case of other crops this brings the question of seed procurement much into the limelight. Unlike numerous other countries Ireland is not in a position to obtain all its seed requirements from home sources. The purpose of this article is, therefore, to explain in some detail what is being done to supplement imported supplies of conifer tree seed. The writer wishes to express his gratitude to Mr. O'Beirne for some practical hints on the collection and storage of cones and to Mr. W. J. Breslin for his yield figures over a period of years.

HISTORY OF SEED EXTRACTION.

The early planting enthusiasts relied almost entirely on foreign countries for their seed. They were handicapped to a great extent by having at their disposal only small and scattered blocks of cone-bearing trees. Gradually the progressive increase in conifer planting became apparent in more abundant cone crops which gave the necessary fillip to the harvesting of home-grown seed.

The erection of the first Irish seed extraction kiln at Avondale in 1930 thus broke new ground in the field of Irish forestry endeavour. As with most new ventures it passed through a testing stage and not until about 1935 do we find it established on a firm footing. From then onwards it dealt with cones from the home and neighbouring forests, the results obtained being a good augury for the future. The increased difficulty of importing seed from 1939 onwards gave the work an added impetus so that we now find it dealing with cones coming from all parts of the country. Its output now represents about 60% of the conifer tree seed requirements of the State Forest Service.

STORAGE OF CONES AWAITING EXTRACTION.

Proper storage conditions from time of collection onwards are the first essential. Preliminary drying is good