A Plea for Shelterbelts of Broad-leaved Trees.

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Foresters in particular and the people in general are being increasingly reminded of the fact that the present emergnecy is resulting in very extensive clearances of woodland areas and in the rapid disappearance of farm-land screens, groups and isolated trees, mostly with adverse effects not readily foreseen and realised only after many years have passed. This fact automatically draws attention, as in the last world conflict, to the urgent necessity of taking steps for the reafforestation of cleared areas and for the speedy replacement of cut-over shelter belts and clumps. Immediate replanting, as foresters well know, is desirable if the entry of weed and scrub growth is to be blocked and before the damaged drainage on wet areas become itself a major problem requiring heavy expenditure before planting can be contemplated. Apparent and imperative as the need is, there are many difficulties to its early fulfilment, not the least being that the majority of these areas are in private ownership—the difficulties of satisfactory afforestation by the private individual are legion—and that they are usually small and widely scattered.

Clearances due to Need for Fuel and Food Production.

One of the fundamental differences, greatly affecting the smaller woods and belts in the country, between the present emergency and the last war is the fuel problem which was never more acute than during the past two years and is responsible, to a large extent, for the denudation of the shelter screens and single trees. The wholesale destruction of these belts and screens is arousing attention and stressing the need for preventive and remedial measures. The production of food, in addition to the provision of fuel, is unhappily accelerating this destruction. It is essential that the bulk of the food required by man and beast be grown within the country and large areas of land, formerly used solely as grazing, must now be given over to cultivation. On these lands, the trees which sheltered the stock from summer heat and winter cold are, under the new conditions, regarded as a nuisance and a drawback. They hamper agriculture with crown and root, the former by casting too dense a shade on the field crop, the latter by blocking the plough on its journeys. The only remedy for the matter is the drastic one of immediately felling the trees.

There is undoubtedly a great deal to be said for the clearing of many of the trees in what is termed tillage country, but the farmer who must fell all the trees round a field on which he intends to sow a crop is not taking a sufficiently far-sighted view of the situation. It is possible that when the emergency is over these lands will revert to grazing ground and shelter cannot be acquired as quickly as it can be removed. Stock breeding and rearing may again become the principal industry and the importance of shelter belts and hedgerow trees to the stock breeder is of supreme importance, especially in a country where much of the stock is wintered out of doors and where south-westerly gales are of frequent occurrence. Artificial shelter in the form of open or closed sheds is expensive. Natural shelter is longer lasting and further reaching in its effects. A shelter belt of trees causes no draughts, as does a solid body. It breaks the wind without formation of gusts. It is calculated that on level ground the shelter effect of trees extends ten feet in a horizontal direction for every foot in height above the ground. This effect of a belt of large trees can be felt far out in the field, which is obvious to many who have tested it on the day of a gale—and it is a fact that many farmers mistakenly think that there is more shelter from a thick whitehorn hedge than from a moderately widely spaced belt of tall trees. Large trees serve as shelter over a proportionately larger area of ground.

The shelter and beauty of the Irish landscape are, to a great ex-

tent, due to the broadleaved tree. The judicious planting of belts and groups of hard woods by our predecessors left us a legacy which is all too carelessly being dissipated and with very little consideration for the future. In a countryside of the Irish type, the cutting over of the smaller woodland belts and groups has a greater effect both on the eye and on shelter than has the clearing of the larger tracts. One misses the familiar roadside belt much more so than the hill plantation; so also do the livestock in unfavourable weather.

Species suggested for Replacement of Former Broadleaved Belts.

In a fertile country, as distinct from the poorer hill regions, the natural forest is of the broadleaved type and in a national reafforestation scheme it is possible to allocate a certain area of better class land for hardwood timber production, conifers being the main species for the larger and more easily acquired, higher, poorer, sites. On a smaller scale, the same procedure might be followed on the farm. The major portion of the land must be devoted to the growing of field crops and the rearing of stock but it should be possible on nearly all the large-sized farms to set aside a small proportion of the area solely for the provision of belts and groups of trees. This was common practice in the last century and it would be almost sufficient if these strips—now devastated waste lands—where previously such stands of trees did exist, were re-stocked. They are manifest in all parts and their size, shape and position are such as to make them eminently suitable for this purpose and of little value for any other. To the replanting of these, with suitable species, as well as to the re-afforestation of the large woodland areas in private hands, attention should be given and advice offered by people competent to do so if the state of the countryside, from the farming and the residental points of view, is to be maintained and ameliorated.

The phrase *with suitable species* is the core and centre of the problem and it is here that proper advice is necessary. There are many farmers quite willing to re-plant and many have actually done so. Belts and clumps of Sitka Spruce and Japanese Larch are appearing, like fungoid growths, on arable farms in all districts. They symbolise a new order in private forestry. As stone and lime are replaced by sand and cement, so Oak and Beech give way to Sitka Spruce and Japanese Larch. It can hardly be called a forward step. Useful as these coniferous species are in their proper sites, they are a shoddy couple when seen sprouting quickly upwards, like rank plants gone to seed, on land which, without manuring, can raise successive crops of wheat. They occupy land on which better quality timber might be produced and where a more efficient shelter can be raised; they are unsightly in such surroundings and do not suit the landscape. From the frequency with which groups of the faster growing conifers are now to be met on the richer farmlands, lower slopes and valleys, it is evident that very unsatisfactory advice is being given to farmers and it is in this connection that it seems expedient to draw some attention to broadleaved species, now being so widely neglected, if a useless type of shelter and an artificial landscape are to be avoided.

It is not intended in this short article to set out all the various broadleaved species with their merits and drawbacks as shelter belt trees and with their climatic and edaphic requirements. The commoner broadleaved trees such as Oak, Beech, Ash, Elm, Sycamore and Horse chestnut have all small preferences as regards soil and situation but they can be satisfactorily grown on the majority of Irish arable farms as the many fine specimens now being cut over have proved. The care and attention which must be paid them from the time of planting onwards are more exacting than these required by conifers but not so intricate or laborious as to interfere seriously with farm work. The extra trouble will be repaid with very superior results.

Care and Attention Belts Require.

The majority of broadleaved species are frost-tender and in the young stages, guarding against frost is, if one omits the rabbit scourge,

the principal precaution to be taken. After planting, very little cleaning of soft weeds or woody growth need be undertaken unless these are injuring the planted trees by direct contact. If the leading shoot is free, and unharmed, it will force its way through fairly dense cover and by leaving as much natural growth round the plants as possible, the danger from frost is considerably lessened. In the replanting of cut-over belts, it is therefore advisable to leave all the natural scrub growth and coppice shoots which will not directly interfere with the selected natural and planted hardwoods. These have a beneficial effect on young plants by shading them from too bright sunshine, by protection from frost, by stimulating height growth and by adding to the fertility of the soil with their annual leaf fall. It is a mistake to open up and thereby expose young broadleaved trees by too intensive grass cleaning and weeding.

On the more open sites, the coniferous tree comes in useful as a nurse and as a means of quickly securing shelter and a dense stocking at an early stage, and it is desirable when establishing broadleaved trees on bare land to mix them with one of the faster growing, light-demanding conifers. These will be generally only temporary ingredients of the mixture and will be removed as the broadleaved trees get past the tender period and as they require more room for development. Common Larch, Japanese Larch and Scots Pine are the most suitable species for this.

The spacing of plants in the young stand must now be guided chiefly by costs, prices of plants and wages of men. Generally, with broadleaved trees, the closer the spacing the better and good naturally regenerated stands whose development is watched will show the crop as a thicket until about the twentieth year. Keen competition between the plants is necessary to force them above shrubby weed growth, to enhance the shape of the better trees and to bring into operation the natural pruning of the lower branches. So the denser they can be planted, the more readily can natural conditions be attained. The introduction of the conifer nurses assists in reducing the number of broadleaved trees which it is necessary to plant and in bringing about the thicket stage as early as possible. Not until the conifers, by contact or too dense a shade, are hindering the satisfactory growth of the broadleaved trees, should they be removed and then gradually here and there as their presence is no longer required. Broadleaved trees, unlike conifers, can usually be left as a thick stand almost until maximum height growth has been reached after which gradual thinning may be done to enable them to expand the crown and put girth growth along the entire length of a clean stem.

Broadleaved trees require individual attention in the young stages and where trees are in small belts and groups, as distinct from large woodland areas, this is not a difficult matter. Pruning with the knife or secateur is an operation which needs constant attention since the density of stocking of natural growth cannot be attained in an artificially formed plantation. This work is directed towards giving the plant the best possible shape, a strong single leader, a clean stem at the bottom and absence of too strong side branches. Pruning in such a way accelerates growth to a remarkable degree but a little pruning each year is much more preferable to a sudden heavy pruning after a long interval. This can cause the leading shoot to put on such rapid growth that there is danger of breakage of the shoot by wind in early summer with consequent loss of height and difficulty in selecting a new leader. Only with a full complement of leaves can the plant feed itself as requisite and it should not be stripped of too many at once. As new side branches appear on the growing stem so the older ones lower down can be proportionately removed. Cutting is done close to the main stem and the best season for this work is from June to August when the wounds heal quickly.

Making use of Natural Seeding where it occurs.

The satisfactory restocking of many broadleaved screens could be effected with practically no artificial planting of purchased plants if a little intelligent forestry practice were applied. The natural growth at

all stages of development, to be met on countless devastated hardwood areas, is at once a tribute to nature's conquest of the rabbit by sheer weight of numbers and to the soil fertility of the majority of these sites. On such partially regenerated strips, by thinning out deformed stems, by reducing the number of coppice shoots and suckers to one per old stool, by lifting seedlings from the denser patches and planting them in the unstocked areas and by pruning off double leaders and heavy side branches, promising groups of broadleaved trees can often be formed. It may be possible to induce the restocking of blanks, after grubbing, with naturally sown seedlings if some of the old mother trees are still standing on the site. The introduction of a shade-bearing species, such as Beech, to the blanks among natural groups is strongly recommneded for bringing the stand up to 100% stocking, and by doing so the growth and form of the light-demanding species are much improved and soil fertility is increased and conserved. Similar procedure applies to an artificially formed plantation of broad-leaved trees—at least one of the species in a mixture should always be shade-bearing and a light-demanding species should never be grown pure.

The natural growth of old hardwood sites is principally Ash which regenerates itself abundantly and appears before, or immediately after, removal of the old crop. Frequency of seed years and small demand for the seed as food by animals and birds are probably responsible, for there is little doubt that the unfortunate absence of natural seedlings of Oak and Beech, even where mother trees exist, is due in great measure to the pigeon and the squirrel before any blame can be attached to the rabbit. Natural regeneration of species having light, readily blown seed is more common than that of species with heavy seed such as the Oak, horse Chestnut, Beech and Walnut.

Summary.

To sum up, every area should be planted with the species of tree most suited to its site conditions and as regards the majority of cut over belts and groups on lowland farms and divided demesnes, there can be no question that some broadleaved speices or another is the correct one. Where conditions are unsuitable for broadleaved trees conifers may be planted but the present neglect of the hardwood on the small, rich sites and the desirability of maintaining the proportion of good quality timbers where they can be grown require emphasising. Extent of area greatly affects the point. Broadleaved trees require careful and intensive management and are therefore most profitable in small units. The formation of absurd belts of fast growing exotic softwoods on good lowland farms and on the sea coasts should be discouraged. They are inefficient as shelter after the twentieth year or so. They are uneconomic from the forestry point of view and aesthetically they do not blend with the landscape unless on mountain areas. Nurserymen and horticultural officials as well as foresters could, in the normal course of their work, considerably increase the popularity of broadleaved trees for their advice is frequently sought by farmers and others who contemplate planting. The recommendation to plant softwoods is very often being made without due consideration being given to all the favourable features of a site.

As regards young plant stocks of the common broadleaved species, there ought to be no lack of these in all nurseries. Seed crops, at intervals of three or four years, supply abundantly of the fruit of the Oak, Beech, Ash, Horse Chestnut, Elm, Sycamore and others and the technique of collecting, storing and sowing seed of broadleaved species could come, to a greater extent, within the province of many nurserymen. Heavy stocks of the more adaptable conifers are required for the poor soil areas and high-lying sites but these species should not be allowed to encroach upon the small favourable situations to which the more valuable indigenous broadleaved trees have a right and on which they can produce a superior form of shelter, a more pleasing appearance and a useful contribution to hardwood timber stocks.