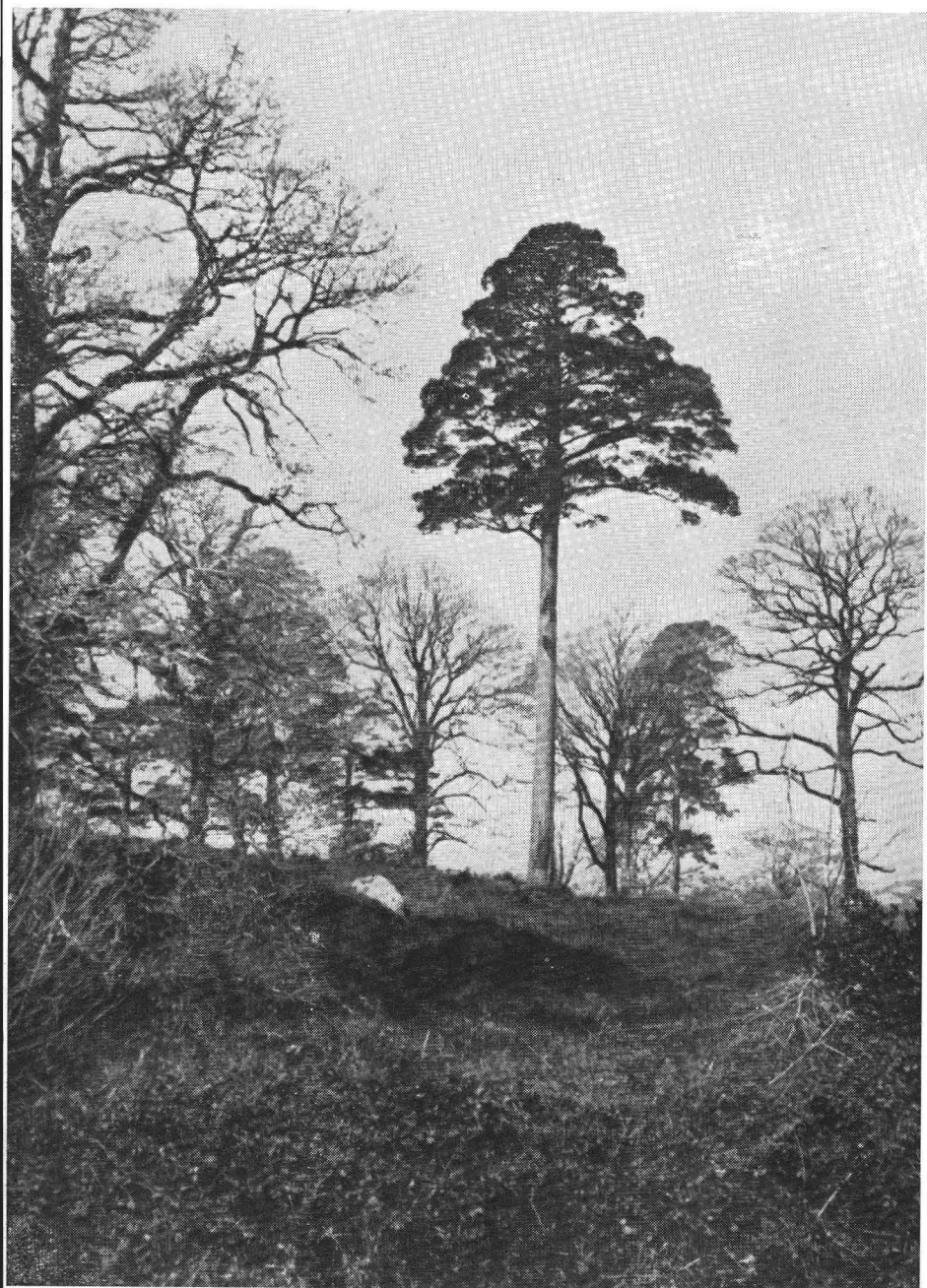


# IRISH FORESTRY



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## THE FARMER'S PART IN NATIONAL AFFORESTATION

By NIALL O'MUIRGHEASA, B.AGR.SC.

SINCE State afforestation came to occupy a prominent place amongst our national undertakings, it is a regrettable fact that many people have gained the erroneous impression that tree-growing is a form of enterprise in which the private landowner is not expected to interest himself, or in which he cannot profitably engage. This is a most unfortunate state of affairs, because national afforestation can never be completed without the landowner's assistance.

State afforestation is a large scale business, dealing with those broad expanses of marginal land which the average private individual has neither the capital nor the technical skill to handle. It generally operates on those outlying mountainous areas where soil poverty and exposure necessitate lengthened crop rotations—rotations which an enduring institution can take in its stride, but which prove discouraging to the private investor.

While it is generally recognised that State departments, government sponsored companies, private companies and local authorities are the most suitable bodies for undertaking large-scale afforestation on marginal lands, it is not always realised that the planting and tending, by them, of those small and isolated plots of waste ground, which are to be seen up and down the agricultural lowlands of our country, would be a doubtfully economic proposition, as well as a most exacting task in administration.

Yet these plots and strips, ranging from a fraction of an acre, upwards, cannot be overlooked when national afforestation is being tackled. They are of special importance for several reasons. In the first instance, though individually they may appear of insignificant dimensions, when considered from the national stand-point, they are not so by any means. If they represented but one in every two hundred acres, they would total 100,000 acres or 156 square miles (approx.) for the whole country. On a conservative estimate this area, if planted and looked after, would increase our timber yield by 6,000,000 cubic feet per annum. Secondly, these waste areas are generally well above the normal run of afforestable land in site quality and consequent timber-producing capacity. Fundamentally they seldom differ in marked degree,



from the soil types of the arable and pasture areas through which they are interspersed. They are neglected for a variety of reasons. In some cases it is because they were at one time under timber crops which being cleared, were never replaced—except by briars and useless scrub, in others it is because of protruding rocks, steep gradients, uneven ground surface, drainage difficulties or simply because of the bad layout of the farms concerned. While these factors reduce the agricultural value of the land, they do not always reduce its forest value in like degree. The luxuriant growth of weeds and scrub vegetation on these lowland plots and strips—growth which simply shouts timber production to the forester, seems to mock at him as he wends his way to the leisurely-growing pine woods on the hill. In the third instance, these areas should not be neglected because, being distributed through agricultural lands, they would if planted, afford that shelter which is such an obvious necessity on a large proportion of our farms. They would moderate the micro or local climate, and would prove a much more potent factor in beautifying the land than the extensive mountain-side plantations.

To interest Irish farmers in the planting of their waste corners, however, is not a simple process. Possibly this is not without reason. We have no forest tradition to inspire us. Security of tenure—which is a *sine qua non* for all private forestry, is something relatively new to our agricultural community. Markets for home-grown timber have been rather unreliable, up to quite recent times, and the groundless bias against native timber dies hard. Again, people without experience in the matter, frequently labour under the impression that tree-planting yields no return for forty or fifty years after the operation has been carried out. This idea, though containing a kernel of truth, is completely misleading. While the final removal of a conifer crop, growing on average quality ground, may not take place for fifty years after planting, a visit to any fifteen year old conifer plantation, on the moderately good type of ground such as that with which most private planters would have to deal, will prove that even at this early age, worthwhile returns may be expected. It will be seen that these plantations are already providing timber in the form of thinnings, for which there is an almost unlimited market, in most parts of the country. The removal of such thinnings from young crops, far from affecting them adversely in any way, improves them. Thinning is an essential part of the process of timber growing. If it is neglected, valuable intermediate yields of both timber and cash are lost, and the over-all timber production in cubic feet per acre, for the rotation is reduced.

Planting costs are sometimes mentioned as another difficulty confronting the private planter. Admittedly, they, like most other costs to-day, are high. But then timber prices are high also, and it is difficult to see how, with an increasing world demand confronting an ever diminishing supply, they will do anything but rise still higher. Though planting costs may be high, the farmer who is dealing with small areas

can effect economies which are impossible where extensive operations by large organisations are concerned.

We live in changing times and it is important that we should be quick to appreciate the significance of some of these changes, and that we should act accordingly. The great timber exporting countries of the past, are now, in some cases finding difficulty in meeting the requirements of their home markets. Importing countries like our own, are as a result, finding timber more costly, and more difficult to obtain. Every country is being thrown more and more upon its own resources. Ireland is no exception. Despite the pitiful shortage of home-grown timber here the native timber industry is struggling hard to play its part.

Our Landowners should realise that those waste corners need no longer be a burden on their holdings. They should realise that these areas can now meet their own share of the rates, rents and taxes which fall for payment with such unflinching regularity. In the economic circumstances of our time, no country can afford the luxury of wasteland. Our farmers should question themselves as to whether they can afford it either.

The financial outlay on the establishment of forest crops may be considered rather heavy. It is surely good economy however, to convert a depreciating asset into an appreciating one, to invest money in one's own land and transform that money into timber which is good currency the world over and which tends to be rated more highly with the passage of time.

To encourage this form of investment, in Ireland, a grant of £10 is payable to private planters, by the Department of Lands, on every acre of land planted with trees, in accordance with recognised silvicultural practice. This grant is paid in two instalments of £5 each; the first is paid immediately after planting, and the second, after a lapse of five years. The second payment is held over in order to insure that the trees are looked after during those critical early years when they are most susceptible to injury by weeds and vermin.

Technical advice as to the establishment and management of plantations may be obtained on the ground, by arrangement with the Department of Lands, Forestry Division, or through commercial concerns which specialise in forest advisory and contract work.

When in the early days of this century, William Bulfin bemoaned the paucity of our forests, and boldly declared that 'Forestry is the work of nation-builders', what a tragedy it was, that his words passed unheeded. Ireland now knows what stability and economic strength an adequate forest reserve would afford her. The State Forest Service is striving to play its major part in making up the lost ground, let our landowners join forces and hasten the day when the truth of those words will be borne out; when a balanced rural economy built through the afforestation of our marginal lands, provides prosperity and comfort to a happy people.

# The Application of Piece Work to Forest Operations

J. H. CANTILLON, B.SC.

THE past 12 years have seen vast changes in the social outlook of our country. The scarcity of labour has become a dominant factor in the manufacture of any produce. Demands for basic wage increases have been made and in most cases justified. Despite this production has slowed down, and it seems that a time wage does not offer sufficient incentive to the worker.

Forestry has been hit hard by the labour shortage. The fact that men do not give of their full value in time work has raised costs considerably, and it would appear that a rise in wages will not bring a corresponding increase in production. Therefore if it is possible to increase the workers pay and efficiency at the same time, much will have been accomplished.

It is suggested that a system of piece-work would be a solution to the problem. Piece-work means setting a value on a unit of work which would be fair to employer and employee. This gives incentive to the worker, because within limits the more units of work he completes the greater the remuneration he receives. The limit should occur at about 75% above his normal wage. For the purposes of this article the basic wage is taken as £4 per week. An individual worker should not be penalised if he makes more than the 75% of the basic wage but if a gang do so, it means that the rate is too high.

Much care and study is needed to strike the correct rate for a job, as reduction after the work has started is not popular. The most potent argument against piece-work is the possibility of poor and slovenly work. The Supervisor should set a standard for the men and make them repeat any work that is not up to standard. A bonus for excellent work also acts as an incentive in this direction. When the workers realize that they are paid a fair return for good work, little trouble will be found.

Although it might appear that piece-work tends to increase supervision costs, such is not the case. The financial incentive is usually sufficient to keep the men working constantly and a bonus for excellent work will ensure a reasonable standard. Time work would necessitate the Supervisor remaining with the gang all day, and even then a comparable output might not be achieved.

Piece-work rates will vary according to the locality and often within it. Alteration of the rate for each change of ground is not practicable, so an intermediate rate must be fixed which will cancel out the difficult and easy parts. Often the men have to walk a long distance carrying tools to their work, or moving from one job to another. In these cases a bonus rate per mile should be paid, rather than increase the piece-work rate to compensate for this loss of time.

The following table has been compiled from observations made in the West Scotland, and South Wales Conservancies of the British

Forestry Commission, and is intended to show the approximate limits within which piece-work rates should lie. The assistance of the Forestry Commission and its staff in providing the data on which these figures are based is gratefully acknowledged.

Table of Piece-work Rates based on a time wage of £4 per week.

Nature of Operation	Unit of Cost	Approximate Cost per Unit
<b>NURSERY.</b>		
Lining out ... ..	1,000	3/6—4/6
Weeding—Transplants ... ..	100sq.yds.	8/—12/-
Lifting and Tying Seedlings ... ..	1,000	1/4
Lifting and Tying Transplants, 1 yr.	1,000	2/9
Lifting and Tying Transplants, 2 yr.	1,000	3/2
<b>PLANTING.</b>		
Flat planting (notching) ... ..	1,000	18/-—22/-
Flat planting and screening ... ..	1,000	22/8
Mound planting ... ..	1,000	18/-—24/-
Mound planting after ploughing ...	chain	1/8—2/-
” ” ” ”	acre	56/-
Mound planting after manual drainage	chain	1/-
<b>DRAINING.</b>		
Manual drains complete ... ..	chain	3/6—5/-
New drains unbottomed including mounding ... ..	chain	2/8—3/7
Bottoming new drains ... ..	chain	2/-
Complete drain in old woodland ...	chain	5/4
Normal upkeep of drain ... ..	chain	2/-—2/4
1st bottoming and repairing old drains	chain	3/-—4/-
<b>GRASS CLEANING.</b>		
Plantation weeding, bracken and grass	acre	18/-
<b>THINNING.</b>		
1st and 2nd thinnings—felling and snedding ... ..	cu. ft.	2½d.—3½d.
1st and 2nd thinnings—felling and snedding ... ..	pole	4½d., 6d. & 8d.
<b>FENCING.</b>		
Rabbit fence, stobs 9' apart (2 plain, 1 barb) ... ..	chain	12/-
Rabbit fence, stobs 9' apart less netting	chain	8/8
Rabbit fence, netting only ... ..	chain	4/4
Rabbit fence, stobs 7½' or 9' apart (3 plain, 1 barb) ... ..	chain	13/-
Sheep fence, stobs 9' apart (2 plain, 1 barb) ... ..	chain	12/-
Deer fence (4 plain, 1 barb) long stobs at 6yds., short stobs at 2yds., droppers and rabbit fencing ...	chain	22/-

## ABSTRACT

# REPORT ON FORESTRY MISSION TO IRELAND (15th February, 1951)

Stationery Office 2/-.

[For the convenience of members we present this summary of the Report and Recommendations prepared by the F.A.O. Forestry Adviser, Mr. D. Roy Cameron. The Adviser arrived in Dublin on 25th July, 1950, carried out a 1,200 mile tour of inspection, spent several days in consultations and left Dublin on 9th August.]

*Introduction:* The introduction sets out some basic points which have a bearing on Irish forest policy.

The disappearance of the primeval forest is attributed primarily to the influence of man. Livestock grazing destroyed natural regeneration and favoured peat formation in the moist climate without any desiccating summer droughts.

The insecurity of land tenure prior to 1900 also was inimical to the increase of the forest area. The landlords' demesnes supported their quota of woodland but this was maintained primarily for sport and amenity and catered only for restricted local timber needs. The general availability of turf as a fuel meant that firewood was of much less importance than in other European countries.

Recent forest area statistics are as follows:—

	April, 1942.	March, 1950.
Woodland in Private Ownership (acs.) ...	108,590	94,871
Woodland in State Ownership (acs.) ...	107,282	142,425
Woodland held by other Public Bodies (acs.)	5,047	5,047
	<hr/>	<hr/>
	220,919	242,343

During the emergency period up to March, 1950, 13,719 acres of privately owned woodland were transferred to the Forestry Division and State planting amounted to 35,143 acres.

Private woodlands are estimated to carry only 50% stocking and only 40,000 acres can be regarded as satisfactorily stocked. No large increase in this acreage can be expected in view of the virtual elimination of large estates, the predominance of small agricultural holdings and the continuing purchase of woodland by the Forest Authority. While private planting may add materially to the amenities and beauty of the countryside and provide limited local needs, it cannot be expected to make a significant contribution to the native timber supply.

In a large part of Ireland soil and climate are favourable to tree growth and on suitable sites results will equal if not exceed yields secured elsewhere in Europe.

The programme recommended is divided into two categories—

- (1) Commercial—to meet the minimum sawn softwood needs in an emergency and
- (2) Social—for soil conservation, stabilization of employment in congested areas and reclamation of idle lands.

## COMMERCIAL PROGRAMME

### *Sawn Softwood Needs.*

In 1948 the *per capita* consumption of sawn timber in Ireland was only about 2 cubic feet as compared with about 6 in Britain (in a year when consumption was abnormally restricted) and 10 in Denmark. It is estimated that Irish consumption may eventually be expected to increase to about  $8\frac{1}{4}$  cubic feet per head as domestic forests come into bearing. For the present population of three millions this would amount to 150,000 standards (of 165 c.f.). Allowing for an increase in population of 50%, the consumption would be 225,000 standards but as this figure is considered excessive, it is rounded off to 200,000 standards. The commercial forestry programme is aimed to produce half this amount—100,000 standards.

### *Rates of Growth and Production per acre:*

The lands to be dedicated to forestry, as included in the Forestry Division's Survey of Plantable Land are estimated to be suitable for species as follows: Sitka Spruce 25%, Norway Spruce 10%; Scots and Corsican Pine 15%; Japanese Larch and Insignis Pine 10%, European Larch 5%, Douglas Fir and hardwoods 5%; Contorta Pine 30%.

Based on this estimate and on these proportions being maintained in land acquisition, on land averaging Quality Class III of the British Yield Tables, and allowing a reduction in yield of 15% to cover risks, unsuitability of a proportion of the *Contorta Pine* for conversion to lumber, yield is fixed at 69 cubic feet Quarter Girth per acre per annum. This figure is almost identical with that of the British programme and compares with actual yields of 76 c. f. for the intensively managed Danish forests.

With a 50 year rotation only 80% of the merchantable volume of a tree will be of sufficient size to be suitable for the sawmill and further loss in conversion is put at 50%. This means that the yield in sawn timber is only 40% of true volume; 325 c.f.Q.G. (or the annual yield from 4.7 acres) will produce one standard of lumber. In round figures, therefore, 500,000 acres of commercial forest will supply the target of 100,000 standards. Annual planting is fixed at 11,750 acres.

This programme should be designed to meet Irish needs at costs which would enable manufacture of wood goods for sale at prices competitive on world markets. A considerable part of the lands are situated in the south and east. For economic working the commercial programme would have to be concentrated on those better forest lands and should be in aggregations of not less than 5,000 acres. This is the area needed to maintain a supply to a sawmill of 275,000 c.f. per annum capacity, hauls of 25-30 miles being considered economic.

In terms of 1950 F.O.B. costs of low grade timber imports the production would gross about £10 per acre with a profit element of about £2 per acre as compared with 16/8 from hill sheep grazing on similar lands. Employment per acre would be considerably increased.

## SOCIAL PROGRAMME

### *Case for:*

Ireland possesses, especially in the west, tens of thousands of acres which are of little or no agricultural value due to infertile soil, poor drainage, excess peat development and exposure to high winds. In these tracts Land Commission efforts to set up economic farm units have at best been only partially successful. It has been necessary to provide government subsidies and relief schemes in order to enable the local population to eke out a hard existence.

Forestry seems to provide an answer to this unfortunate situation. The development of modern mechanised planting technique gives promise of the establishment of forests on lands on which formerly trees could not be made to grow. Such forests will be of comparatively low productive capacity and cannot be expected to pay cumulative interest charges on the capital investment. Nevertheless the establishment of such forests would well serve the national interest. They might not produce much saw-log material but they would produce pit props and pulpwood in quantity and provide a reserve against national emergencies. Government funds, which now go into projects involving maintenance charges and no productive return, would under a social forestry programme become capital investments which in the long term would yield financial returns.

### *Objective:*

The objective would be to provide sufficient produce to pay operating costs but not capital investment charges.

The rate of land acquisition, planting, thinning, etc. under this Social Programme need not be as rigid as under the Commercial Programme but could be varied according to prevailing economic conditions. It seems safe to assume that there are at least 500,000 acres which in the national interest require to be afforested as part of the Social Programme.

## IMPLEMENTATION OF PROGRAMME

### *Review Board:*

In order to integrate forest policy into other land use programmes and to resolve conflicts between competing land uses, a sub-committee of the Cabinet should be set up to act as a Board of Review at the highest policy level. This Board would be assisted by an Inter-Departmental land use committee. Acquisition policy should be approved by the Board.

### *Finance:*

Temporary budgetary difficulties should not be allowed to jeopardise the success of an undertaking involving a capital investment of the order of 100 millions pounds. Legislation is suggested to ensure at

least a minimum commitment to be included in the budget of each fiscal year.

*Public Education:*

There is no forest consciousness in the minds of the people of Ireland such as exists in Scandinavia and other nations where the forest is an important element in the national economy and way of life. The implementation of the programme will introduce an element strange to traditional habits and thinking. The innate conservatism and suspicion can be overcome only by using every modern implement of mass education, the press, radio, motion pictures and, particularly courses of lectures in rural districts.

*Department of Forests:*

Only a separate Department can be expected to wield the authority, prestige and influence necessary for the carrying out of so large a programme. Two alternatives are discussed—a Commission on the lines of the British Forestry Commission, the E.S.B. or Bórd na Móna; or a Government Department. While the former has important advantages in eliminating 'red tape', the Department would have its Minister in the Cabinet and on the Board of Review. This would make for steadier, if slower, progress with less danger of clashes or arbitrary decisions. Preference is given to the Departmental system only on the understanding that 'red tape' is reduced to a minimum.

The Minister for Forests should have freedom to gather round him the best technical, and administrative and public relations staff. Expert consultants might be offered short term appointments. The importance of satisfactory remuneration for all staff and satisfactory living accommodation for field staff is emphasised. Pensionable status is described as the common right of field personnel wherever forest management is practised.

## ORGANISATION AND TECHNICAL PROBLEMS

*Acquisition:*

The basic responsibility of indicating the lands suitable for acquisition and the recommendations as to price to be offered must remain with the forest authorities. The present arrangement whereby Land Commission Inspectors are seconded to the Forestry Division to deal with land tenure complications and to advise on the relative importance of the differing elements in acquisition represents a very useful procedure. These Inspectors should however be under the direction of the Forestry Division as regards scope and priorities of work.

The Department should have power to arrange for local exchanges of land in order to cater for those farmers who are willing to trade but not to sell. The present price ceiling of £8 per acre should be raised



to £12 for good land with provision for higher prices in special cases where approved by the Board of Review. As an alternative to migration by the Land Commission a cash bonus might be added to the forestry value of lands. Compulsory acquisition proceedings are recommended where the holders of 75% or more of the rights of a suitable commonage agree to sell. The Forestry Division should take the initiative in selecting and offering to purchase suitable lands. A three year planting reserve should be built up with the minimum of delay.

*Mechanisation:*

The use of machinery in the nursery and in the preparation of land for planting has revolutionised afforestation techniques in recent decades. Costs have been significantly reduced and large areas previously unplantable have (by the use of heavy deep ploughing and subsoiling equipment) been transformed into valuable forest lands. The use of such equipment is strongly urged.

*Research:*

A strong Research organisation is necessary for efficiency and as an insurance measure, especially as such large use is being made of exotic species whose behaviour in mass plantations cannot be foreseen. Ireland has so much land which could be improved by mechanical treatment that it should be in time a world leader in this field. Other work awaiting the attention of a research organisation include seed provenance, new nursery techniques, use of fertilizers on poor ground, possible deleterious effects on the soil of pure coniferous plantations, introduction of hybrid poplars and crop protection studies.

*Labour:*

The payment of labour at the county rate with a bonus for piece-work over an agreed minimum is advocated. The County Councils should provide workers' houses on lands made available by the Forest authority.

*Management:*

In order to provide a market for thinnings preliminary studies of the possibilities of establishing pulp mills should be carried out.

The better type of land obtained through the break-up of demesnes should be devoted mainly to hardwoods in order to cater for local markets.

*Education:*

The afforestation programme should be administered by properly trained Irishmen. A corps of University-trained officers will have to be established and expanded. Pre-selection of likely candidates and assurance of employment on graduation is recommended. One of the first duties of the new Department will be to make a thorough assessment of future needs of professionally-trained staff and then to develop a comprehensive plan for training and recruitment in full collaboration

with the educational authorities. In Switzerland there is one University-trained forest officer for every 11,000 acres of forest land.

Expansion of the facilities for sub-professional training of foresters is also required and an arrangement whereby a certain number of the students might be given an opportunity of University education is recommended.

*Rotation Ages:*

The 50 year rotation proposed in the present programme should be adequate for Sitka, Douglas and Western Hemlock but longer rotations of 60 to 70 years will probably be necessary in the European species such as Scots pine, larch and Norway spruce.

*Species.*

Undue concentration on any single species is to be discouraged and European species should be used where growing conditions would seem to give promise of economic justification.

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## APPEAL

Recent increases in the costs of paper, printing, stationery, etc. together with the expanding range of activities of the Society, have strained our financial resources and depleted our cash reserve. The Council has considered the situation but is reluctant to recommend a general raising of subscription rates. The alternative solution, and the one most in accord with our aims, lies in increased membership. The Council earnestly appeals to every member to help by introducing at least *one* new member during the year 1952.

# Excursion to Carton Estate

Report by A. M. S. HANNAN.

**D**ESPITE heavy showers, over 60 members and friends gathered at Carton, Maynooth on 28th July, 1951, for the first summer excursion of the Society. Carton was, for over 200 years, the home of the Dukes of Leinster, who created one of the most beautiful estates in Ireland, in the middle of uninteresting, though fertile, countryside.

The party, which met in front of the Georgian mansion, was welcomed by Mr. Hanan, Forester, on behalf of Lord Brocket, who was unfortunately unable to be present. He then outlined, briefly, the history of the plantings that had taken place and their subsequent treatment.

The first planting took place almost 200 years ago, and were merely amenity belts of Oak, Cedar, Beech and Horse-Chestnut. After 100 years a Duke of Leinster, who was a keen sylviculturalist, did some Selection fellings, to produce monies for the extensive planting of woods of Beech, Sycamore, Lime, Elm, Norway Spruce and Douglas Fir. 20 years later, (about 1880), saw the laying down of the most interesting plantations in Carton, for, as well as all the common Hardwoods, we find at least 21 different Conifers, planted into the old wide-spaced Oak and Norway Spruce.

The party then moved off to inspect an area of this type. The wood chosen for inspection was Moygaddy Wood, a long and comparatively narrow strip, comprising 102 acres, which contains, as well as the tree crop, a wide range of flowering shrubs, originally planted for game cover.

The members soon noticed that every tree had been planted with its own individual ring of wire-netting. Mr. Clear suggested that this method might be suitable for use with a modified Selection system, either with single-tree or group fellings. It was also suggested that the wires could be removed and used for further planting. Mr. Hanan was in favour of wiring-in small areas, rather than individual trees, to allow for some natural regeneration. Mr. O'Beirne said that in Germany they had found that the true Selection System had proved to be uneconomical. It was agreed that the first treatment for Moygaddy Wood will be the clearing of the heavy undergrowth of shrubs, especially rhododendron, which have been sorely neglected, due to there not having been a forester in Carton for over 20 years.

Before departing, most of the party had a quick walk around the shrubbery and Pinetum, in which, though the range is not extensive, there are some remarkably fine specimens, notably *Abies grandis*, *Cedrus libani*, and *Tsuga heterophylla*.

## EIGHTH ANNUAL EXCURSION

THE 8th Annual Excursion of the Society was held in the Cowal district of Argyllshire, Scotland, and proved a most enjoyable and instructive trip. All arrangements for travel, accommodation, meals, etc., were looked after by our very capable and efficient Excursion Committee so that members were free to enjoy every moment.

For this Excursion the party split into two groups; one group travelling by air to Glasgow, and the other by boat. From remarks overheard it would appear that the idea of air travel has been 'sold' to more than a few who were making their first flight. "I'll never travel overseas any other way in future" was a typical reaction from members who had previously done their cross-channel trips by boat. Remembering our Holyhead-Dun Laoghaire trip of two years ago the recorder is inclined to agree with the air converts. At any rate the journey to Dunoon was smooth and enjoyable in spite of the fact that we were 'smuggling' one man who was minus passport or travel permit, but who was enabled to make the trip through the courtesy and co-operation of the emigration officials at Collinstown and at Glasgow.

From the comprehensive notes supplied by the Forestry Commission we had already learned that the configuration of the ground in the Cowal peninsula is typical of the western Highlands of Scotland, being formed of a series of hill ridges and intervening glens. The main lie of the glens is in a north and south direction and they are generally narrow with steep slopes on either side. The peninsula is deeply cut into by four arms of the sea which penetrate for a considerable distance from the Firth of Clyde. These again run more or less north and south. From east to west they are Loch Goil, Holy Loch, Loch Striven and Loch Riddon. One fresh water loch, Loch Eck, occupies a fairly central position in the district.

The climate is also typical of the western seaboard of Scotland with no extremes of heat or cold but with very high rainfall. Annual figures show the average rainfall to be between 80 and 90 inches. Snow is infrequent and does not generally lie long below 1,000 feet. Late frosts are frequent and damaging however, and winter gales are common and are to be feared from the thinning stage onwards due to the heavy rainfall and the proximity of rock to the surface.

Exposure on western slopes can be very severe. There is no land mass between the majority of forests and the Atlantic Ocean and therefore no break to the strong prevailing winds. The limit of planting is thereby much reduced in comparison with eastern localities and it is seldom possible to plant higher than 900 ft. even when the quality of the ground above that elevation is sufficiently good for conifer species.

The rock formation is mainly metamorphic—quartzites and schists with some igneous intrusions. The metamorphic rocks were originally sediments such as impure sandstones, shales, limestones, etc. but their mineral composition and structure have been greatly altered by intense heat and pressure. They may be recognised by the presence of marked

cleavage or foliation which causes them to split very readily in one direction. The primary rocks have been formed by the consolidation of molten material and may be distinguished from the metamorphic rocks by their more homogeneous nature. Apart from glacial deposits, which are still loose and uncompact, the region has no rocks other than these two.

The soils of this region may be divided into three main classes; (a) deep fine loams derived direct from the parent rock and carrying a vegetation of scrub, bracken and the finer grasses; (b) gritty or rocky loams or clays of glacial origin and carrying calluna and hill grasses; (c) peats, generally shallow, over gritty or rocky loam and clay and with molinia-juncus associations if of better quality, and scirpus, erica and vaccinium if of inferior quality.

Prior to the establishment of the Forestry Commission the greater part of the lands of this district were used for hill sheep farming. Private woods were few and far between. Apart from the woodland areas at Benmore, Glenfinart and Ardkinglas with smaller lots forming policy woods adjoining the residences of the lairds, there was very little timber grown, or artificial plantations formed. Much of the lower hill slopes, however, were under a natural scrub of oak, birch and alder.

There are now eight State Forest units established in this district. They comprise a total of 66,342 acres of which 17,500 acres have been afforested to date. The forest units of Ardgartan, Glenfinart, Glenbranter, Benmore, and Loch Eck, together with the Glasgow Corporation estate of Ardgoil, constitute the Argyll National Forest Park—the first of the National Forest Parks to be established by the Forestry Commission.

At the conclusion of our tour of the State Forests and as a mark of appreciation our Society entertained the members of the Forestry Commission staff and all others who had been associated with us on this excursion to dinner. Among the guests, also, was Very Rev. Canon McLean, of Dunoon. Mr. McEvoy, our President, in thanking the Forestry Commission staff for their kindness, and hospitality, and the great trouble and pains they had taken to make our trip the wonderful success it was, paid tribute to the foresight and energy with which they tackled their problems and to the *esprit de corps* noticeable in all ranks.

### **First Day, 22nd May.** (Reported by D. Mangan).

The excursion opened with a visit to Benmore Forest. Here we met Mr. Stuart M. Petrie the district inspector, who of course was renewing friendships with the many members who had known him during his time in Ireland. We were introduced by him to Mr. James, conservator, Mr. Dier, divisional officer, Mr. Watson, who is in charge of Benmore Forest School, Mr. McPherson, assistant district inspector, and Mr. Jackson, the forester. We were also glad to welcome to our party Mr. McNeill of Aberdeen University. It is worth remembering in

passing that Mr. Petrie, who was acting as convenor for this excursion, was also convenor for our first annual excursion, that to the Clonmel district in 1944.

Our first stop at Benmore was to admire the magnificent conifers growing beside the main road. These were part of the plantings carried out by Duncan in 1870 on a fairly rich alluvial soil and in a well sheltered situation. They were a mixture of Douglas fir, Sitka spruce, Silver fir, Thuja, and Cupressus, but fellings during the 1914-18 war greatly depleted the original plantation. As we examined these fine trees we were given figures for some of the more outstanding specimens planted in 1870; here they are.

Species	Total Height	Volume
Sitka spruce ...	100 ft. ...	437 cu. ft.
Thuja plicata ...	100 ft. ...	375 cu. ft.
Abies Lowiana ...	105 ft. ...	455 cu. ft.
Abies nobilis ...	102 ft. ...	243 cu. ft.
Douglas fir ...	136 ft. ...	480 cu. ft.

This last Douglas fir was 120 ft. to timber height and 24 ins. Q.G. at half timber height.

When we had admired these forest giants a discussion arose as to the treatment of the different species and Mr. Dier raised the question of getting natural regeneration of Sitka by longer rotation. 'If,' he said 'the current increment per cent. is increasing rapidly at 50 years there should be no pressing reason for felling.'

This estate was gifted by Mr. Younger (not unconnected with a stimulating beverage carrying his name) to the Forestry Commission, part of it in 1925 and the remainder, including the mansion house, in 1929. The Commission immediately turned the mansion into a Forest School. I am sure many members of the party regretted, as I did, that we had not sufficient time to inspect this school. However, we consoled ourselves by admiring the magnificent rhododendron display along the avenues and on the lawn. In addition, Mr. Watson took advantage of a short halt to give us some facts about the general running of the school.

It was at this stage that we were joined by those excursionists who had come by sea, some looking perhaps a shade green around the gills but otherwise in good order.

Having admired a 78 years old drive of Sequoia (*Wellingtonia*) with heights around 100 ft. we visited a plot of S.S./D.F. also 78 years old which had an underwood containing most of the North American Pacific coast conifers. Mr. Watson here mentioned the importance of side light for natural regeneration and pointed out how the removal of some very large *Abies nobilis* in 1941 gave openings for prolific seedlings. Members who have recently visited the Silver fir plots at Avondale will have seen this experience duplicated there.

From the Pinetum and Gardens we proceeded to Cruach Wood

which had been planted with a mixed crop of Thuja plicata, Silver fir, Douglas fir, European larch and Scots pine and which had received frequent thinnings. One 5-acre block had yielded 12,000 cu. ft. in thinnings representing about  $\frac{1}{3}$  of the stand volume. The crowns are now quite free and Mr. Petrie was in favour of leaving the remaining stems to see if natural regeneration can be obtained.

Leaving Cruagh Wood we took the buses to the Coylet Hotel where we had a very pleasant lunch. Having fortified ourselves for the afternoon session we drove by Holy Loch and Loch Long to Glenfinart forest.

Our first stop here was in a P/27 Sitka stand from which light poles had been extracted to the road side. The first thinning yielded 320 cu. ft. per acre and the second thinning 550 cu. ft. Mr. Petrie considered the first thinning too light and the second too heavy.

We then proceeded through the woods to a small colony of timber houses by the shores of the lake. These were the Swedish type of prefab. house and were occupied by forest labour.

We then proceeded to Shore Nursery. This nursery of 18 acres on thin gravelly soil requires plenty of 'bulk' manure, such as F.Y.M. leafmould and seaweed. However it is an easily worked soil and on that account seed sowing is done here in preference to at Benmore nursery. In this nursery they aim to get larch and Scots Pine to the lining-out stage at one year leaving spruce to remain two years as we do here in Ireland. Weed control embraces the use of the paraffin blow-lamp and the party saw it in action on seed-beds sown one week earlier. Another novelty to Irish foresters was the sight of girl-workers weeding and hoeing the lines. The question of board-lining versus hand-lining of transplants came in for serious discussion; apparently board-lining is the sole practice in this part of Scotland.

We left the nursery after debating the possible causes of a leaf-discoloration in D.F. plants and inspected a Bailey bridge in the forest. It appears that a Conservancy contains in addition to the forest branch, a Land Agency branch, a Private Woodlands branch, and an Engineering branch. Professional engineers are employed for road making, bridge building, etc. The bridges are designed to carry maximum loads, but the roads at present are only constructed for extraction of thinnings, fire protection, etc.

Our final stop was to watch a chute about 400 yds. long extracting light poles from the upper part of the hill to a central dump lower down. This concluded our outdoor activities for the day and we returned to our base at Dunoon.

**Second Day, 23rd May.** (Report by H. M. FitzPatrick).

**W** RITING in the "Empire Forestry Review" of June, 1951 on "Extraction of thinnings", R. F. Wilson says "The Engineering Research Branch of the Forestry Commission are at present working

on this problem, and are engaged in the development of a powered aerial ropeway, which is undergoing experiment in the Cowal district of the west of Scotland. The growth of timber in this area is very great, and the extraction difficulties enormous. The results of these experiments to date are most encouraging."

Our party had an opportunity of inspecting these ropeways at Glenbranter Forest on the second day of the excursion, and hearing details of their construction and usefulness from Mr. James, the Conservator. The first seen was on the Wyssen system and was being used for the carriage of Sitka Spruce poles down a steep slope. It had a span of 450 yards without intermediate supports, made possible by the concave profile of the hill, and consisted of a strong carrier cable of woven wire rope  $\frac{3}{4}$ " diameter, on which ran a double carriage. The speed of the carriage downward was controlled by a lighter cable attached to a small winch, with brake, at head of ropeway, and the winch was powered by a small motor engine which was used to draw back the carriage after each run. The main cable was kept taut by a monkey winch at the bottom, which was anchored to several plates, each held fast by eight spikes driven into the ground.

A demonstration of the use of the cable was given. Eight poles, twenty feet or so long, were dragged to the starting point by the engine and winch on the end of the control wire. They were then hoisted to the carriages by means of a block and tackle operated by endless chain, the control rope was attached and off they rushed downhill. The despatch was notified to the men at the roadside dump by means of a field telephone, and within a minute of the warning signal and the "go ahead" response, down came the load with a screech of pulleys, and was brought to rest over the dump by the control rope. The poles were let down from the carriages by operating the endless chains and unhooked, the signal was given and the carriages were pulled up again for a further run.

Mr. James explained that the control rope and engine could be used to pull in poles to intermediate points along the main carrier wire. This is done by running the rope through a pulley block attached to a tree at the selected point, attaching the load and winding up the winch. This use is the main feature of the Wyssen system.

Later on there was a demonstration of another form of aerial ropeway. This consisted of a carrier cable of 300 yards, a return wire and a control rope. The poles, 3 to 10 according to size, were hitched on to the carrier cable with slings and pulleys, and released down the slope, the speed of descent being controlled by a brake drum. Two sets of slings and pulleys were used, and the descending load pulled up the spare tackle on the return wire.

Glenbranter Forest, we are told by Mr. S. M. Petrie the District Officer, consisted of 3,357 acres of plantations, which stretched for several miles along Glenbranter, Glenshellish and Glensluan, steep-sided glens which are typical of the West Highlands. The main block



is one of the Commission's earliest acquisitions, and originally comprised four sheep farms belonging to Sir Harry Lauder. Planting was commenced in 1921-22 with Spruces mainly and, as at that time it was considered the hardier species, Norway was kept to the higher ground and Sitka was planted below. Mr. Petrie commented that the reverse would be present day practice.

The absence of roads was a serious handicap, said Mr. Petrie, until recently, when the Engineering Branch opened up the area by constructing a total length of twelve miles of roads into all parts of the forest.

On the slopes above Glenshellish farm we heard a strange tale of mice and men. In the early thirties, said Mr. H. Dier, Divisional Officer, when the grass clad valley of this farm was being planted, there occurred a plague of voles, which did considerable damage by eating the buds and nibbling the bark of the newly planted trees. In the years 1930 to 1934 the "wee sleekit, cow'rin', tim'rous beastie" which excited so much sympathy in the poet Burns, became a formidable forest pest, and we were told fearsome stories of an army of mice which followed the squad of planters day by day, seeking what they might devour.

The Forestry Commission shared none of Burns' sentimentality, and were not laith to rin an' chase with every weapon at their command. Virus disease was planned; Edinburgh University was asked to advise on the best methods of attack, whilst all the time the numbers increased. They built up to a peak in 1934 and then, suddenly, they died out. Later, there was a mild epidemic and the same thing happened. Owls and kestrels came in at peak periods and lived on the voles, but they never wiped them out, and there is a certain number there still.

Down by the river we walked through a spruce plantation, which was originally 50% Sitka and 50% Norway formed in 1924 with the idea of selling the Norway as Christmas trees in the Glasgow market. By the time of the first thinning in 1943 the Norway was badly suppressed and suffered severely during the work. A second thinning in 1946 and a third in 1950 removed most of the Norway, and a further thinning is planned for 1953. Measurements made at the time showed that an average of 450 cubic feet per acre was removed in the second thinning and from 600 to 700 cubic feet per acre in the third thinning. At the present time the remaining trees average 6 to 7 cubic feet each.

Thinning and extraction and the fire hazard are the three great problems of the area, explained Mr. Petrie. Owing to the rapid growth of spruces, thinnings must be heavy and repeated at short intervals. The large annual planting schemes which were comparatively easy to do twenty odd years ago are now coming in for thinning, and when it is remembered that this must be done at three or four yearly intervals the build-up of the work year by year is colossal. Glenbranter Forest is under the charge of two Grade II Foresters, Messrs. A. MacLean and A. Gillies, and employs fifty workers for maintenance and thinning operations. Last year the thinning was eased by the disposal of 16,000

cubic feet on the stump to a timber merchant, who supplied his own labour for its removal, and it is hoped to extend this method of sale.

The new roads, the aerial ropeways, chutes, slides, caterpillar tractors, and other methods of getting out felled material are gradually overcoming the second problem, but with the increase in quantity and in the weight of individual poles, it will continue serious for many years.

The party heard a lot about fire and its danger, and examined with interest the fire notices and literature prepared by the Commission. Fire is an annual menace to the plantations situated as they are in a National Park, which is open to the public, and with a dry spell commonly occurring at Eastertime. As well as educative steps, such as the notices and literature, practical measures to prevent fire-spread consist of firelines and stacks of birch brooms at points along the roads and paths.

Strathlachlan Forest on the shores of Loch Fyne was next visited. This area runs to 7,616 acres and was formerly four hill sheep farms. It was taken over by the Commission in 1946, and already 826 acres of planting has been done, consisting of Sitka and Norway Spruces, Japanese and Hybrid Larches, and Pinus Contorta on the highest and poorest ground. On heather-molinia covered soils Sitka Spruce has been mixed in lines with Scots Pine, and growth so far has been good.

The principal interest for the visitors was the demonstration of mechanical draining by Cuthbertson plough. Mr. James pointed out that the use of this plough was now standard on peaty land of the type seen, and that its advent had changed their ideas about plantability. The large wheels on the plough, he explained, act as a stabiliser, and the plough is attached to them in such a way as to permit it to move up and down to suit the ground. The usual spacing for sheep drains, said Mr. James, is 21 feet apart, and it is usual to run them on a slant across the slope and to use the sod to make mounds spaced at 5 feet apart. On pan ground, he added, the drains may be as close as 5 feet and the planting is done on top of a continuous sod. In all cases, however, he commented, close ploughing may not be good, as it can result in a quick start in growth followed by a slow down.

The plough seen in action cut a wide sod with ease across the slope of the ground, cutting deeply into the soft patches and more shallowly into the hard ribs, and turning out small boulders without any difficulty. Traction was by caterpillar tractor, and we were told that two types are used, the TD9 and the D2, the latter being preferred on the softer kinds of ground. It is hoped later to get a special tractor, the "Water Buffalo," for really wet and boggy terrain.\*

In the course of a discussion on the positioning of drains, Mr. T. Dalgleish, Forestry Consultant, said that he favoured main drains

\* NOTE:—The TD9 and D2 are both Diesel engined crawler tractors, the former being manufactured by the International Harvester Co. of Chicago, U.S.A., and the latter by the Caterpillar Tractor Co. of Peoria, Illinois, U.S.A. The 'Water-Buffalo' has been developed by Cuthbertson of Scotland—Ed.

running straight down the slope as being most efficient. Mr. Dier mentioned that vertical drainage had been discarded by the Commission, as they found in the course of their operations that drains made in that manner led to erosion in times of heavy flooding. Mr. James added that the Commission's experience was all in favour of contour lay-out as contour drains were better than vertical ones for trapping soakage, and that they carried off the maximum amount of water with the minimum yardage of drain.

Other features of Strathlachlan Forest of which we were told, were that three of the four original sheep farms will be retained as permanent farm units with their existing arable ground, and with access to the unplatable ground for sheep. Planting is being done in blocks to suit the economic working of the farms, and fences are being erected so as to provide safe passages, "downfalls," for sheep passing from the high to the low ground in times of snow. One of the farms, Lephimore, has been taken over by the West of Scotland College of Agriculture, as an experimental hill sheep farm, and a good deal of research work on stock, crops and grass is being carried out.

### **Third Day, 24th May.** (Report by D. McGlynn and J. Ryan).

The skies were downcast as we departed from Dunoon on the final day of our Scottish excursion. The weather experts, however, were optimistic, and so we sped along through magnificent rugged Highland scenery to Inveraray. In this old world town, we halted and as on the previous days there was that surprise cup of tea or coffee provided on this occasion by Mr. and Mrs. Dalgleish.

A short distance beyond Inveraray we dismounted to inspect a giant Silver fir (*Abies pectinata*) stated to be a largest conifer in these islands. It was taped at 21 ft. in circumference B.H. and had an estimated height of 168 ft. giving a volume of some 1,600 cu. ft.

On our arrival at Cumlodden we were warmly welcomed by our host, Sir George Campbell. Light refreshments were provided and later in a heavy mist we commenced our tour of the estate. In some excellently prepared notes, supplied by Sir George, we learned that Cumlodden Estate was a typical small Highland property of some 6,000 acres except that the forest area is larger than is usually found. The climate generally is mild often humid. Rainfall averages 75 inches. The prevailing winds are from the south-west with gales not infrequent. Tree growth often persists to December/January and there is a danger from spring frosts.

The woodland areas here would appear to have been of natural oak grown first for charcoal; later used for smelting and lastly coppiced for "bark". The last of this oak was only liquidated during the last war when it was converted into pit props for use in the Welsh mines.

The reforestation of Cumlodden was started only in 1919 and by

the present owner, and to date a total of 378 acres out of a final target of 500 acres has been planted. All heavy timber has been felled so that the woods now being established contain nothing older than 30 years. Sir George is an advocate of early and comparatively heavy thinning and since 1939 his woods have yielded 105,000 cu. ft. in thinnings.

In the Flagstaff section of Compartment 1 we inspected a 14 year old stand of S.S. planted on turves at 5 ft. spacing. First thinning had been the previous year when the stand was only 13 years old and some 280 cu. ft. realising 1s. 2d. per cu. ft. were removed. Thinning did not appear to have been too early and development was satisfactory.

In compartment 2 a small plot of hybrid larch did not appear promising. Sir George suggested that the poor crowns and general stagnation might be due to delay in thinning. Mr. Clear pointed out some stems which were average for the species and age while Mr. McEvoy questioned the wisdom of planting larch on what appeared to be a dry *vaccinium* site.

On arrival at the Forest Garden the party split into two groups. Here we saw a very interesting variety of the lesser known conifers. This garden contains 93 plots each of a different species of conifer. The first plots were laid down in 1932/33 and all plants had been raised from seed in the estate nursery.

In Compartment 10 we inspected the first plantings carried out by the present owner and also the first plantings of S.S. in Cumlodden. The S.S. was planted at  $3\frac{1}{2} \times 3\frac{1}{2}$  ft. and thinnings commenced at 10 years. Mr. Dalgleish, who was forester at Cumlodden, when the early thinnings were carried out, pointed out a small area which he said had been thinned according to Schlich's prescription, most of the trees on this area had blown over and the method had not been a success.

Passing through Compartment 8 we arrived at a small plot of Silver fir (*Abies grandis*) planted in 1920. To date 242 stems per acre remain with a volume U.B. of 3,514 cu. ft. per acre. Thinnings to date have yielded 1,492 cu. ft. per acre. This gives a mean annual increment of 162 cu. ft. U.B. Sir George invited discussion on the future treatment of the stand. Mr. Clear suggested that the aim should be to reduce the number of stems to about 80 per acre in 10 years. Mr. McEvoy remarked that at Avondale it was observed that *Abies grandis* tended to 'sway' to a greater extent than most of the common conifers and suggested heavy thinning to promote well-developed crowns.

It was at this stage that we had regretfully to bid good-bye to some of our party who were returning to Ireland by sea.

We then proceeded to inspect an area showing group 'die-back' of S.S. and N.S. which is at present occupying the attention of the Research Branch of the Forestry Commission. The first symptoms are retarded crown growth with heavy coning often accompanied by bleeding from the stem. Mr. O'Beirne found the mycelium of Honey

fungus on an affected stem but as Honey fungus was also present on most stools in this area its presence as a saprophyte and not as a parasite could not be overlooked.

Proceeding downhill we arrived at a stand of Jap larch planted in 1922 but which had in 1939 been heavily thinned and underplanted with Tsuga. An interesting discussion took place as to the merits and demerits of underplanting and the view was put forward that a definite volume of timber per acre could be produced on a given site and that the introduction of an understorey would reduce the yield of the main crop. Mr. Davidson, however, held that the understorey could not depress the main crop because the root systems were at different levels and not in competition. Mr. Deasy held that underplanting at that age could only be justified where the main crop was an inferior one and therefore was not justified in the present instance.

The next item inspected was a plot of S.S. planted at 6½ ft. spacing in 1923. A brashing in 1936, pruning of elite stem in 1937 and thinnings in 1941, '43, '44 and '48 all had for their aim the greatest possible volume production in the shortest possible time. The success achieved is shown by a comparison with the British Forestry Commission Yield-tables.

	Age	Height	No. of stems/acre	Volume U.B.
Cumlodden	27 yrs.	67 ft.	274	4,750 cu. ft.
B.F.C. Yield Tables	30 yrs.	69 ft.	505	5,800 cu. ft.

The periodic mean annual increment (23 to 27 yrs.) for the Cumlodden stand is 544 cu. ft. U.B.

In a discussion on future treatment Mr. Dalgleish suggested further heavy thinnings. Replying to the point that there might be a danger of windthrow he said he deprecated the "solid wall" idea and would advocate an "open formation to let the wind through." He also said he was convinced that 8 ft. or even 12 ft. spacing of S.S. was desirable. Messrs. McEvoy and Johnston supported him in the view and quoted instances of the success of wide spacing in Ireland.

The party then passed through the well-stocked nursery to Carrae Lodge where we were entertained to tea by our host. In thanking Sir George for his hospitality and for a most instructive and interesting tour Mr. Clear paid tribute to the foresight and energy shown by him in his forestry operations and said he was glad to see that the sylviculture as practiced by Sir George vindicated his oft repeated plea for wider spacing when planting and heavier thinnings.

And so we came to an end of our second excursion outside our own shores, and returned treasuring memories of new friendships and of the hospitality received in the Scottish Highlands.

# Excursion to Roundwood Forest

Report by M. SWAN.

THE second of the Society's Day Excursions was held to the Department of Lands forest at Roundwood on Sunday, 9th September. Mr. Mooney, having first welcomed the party on behalf of the Minister for Lands, gave a short history of this forest. The first acquisition here was of 81 acres from Lord Powerscourt in 1931 and then in 1935 some 965 acres were acquired from three local farmers. At the time of acquisition most of this ground was covered with strong *Calluna* with various admixtures of *Molinia*; there was about 80 acres of lower enclosed fields with strong furze and about 50 acres of the better grass-bracken type.

Although this property ranges in elevation from 995 ft. to almost 1,800 ft. it is well sheltered from the prevailing west and south-west winds. The average annual rainfall is about 50 ins.

Our first stop was to inspect a 1937 planting of S.P. at 1,135 ft. elevation. The vegetation had been *Ulex Gallii* dominant, with *Calluna* and *Molinia* but the furze was cleared before planting. This plantation cannot be considered a success. After 14 years the best trees are only 8 to 9 ft. high while the average is only 2 to 3 ft. Although the furze had been kept in check for several years after planting it had been allowed to gain control again and Mr. Mooney said he believed much of the blame could be attached to competition with the furze and suggested ploughing as a possible solution. Mr. McEvoy said the *Molinia* in the vegetation indicated impeded drainage as another adverse factor present and agreed with Mr. Mooney that the solution seemed to lie with mechanical cultivation.

The next plot visited was at an altitude of 1,255 ft. and was of S.S. also planted in 1937. Here the average tree was 12 to 15 ft. high and the crop was vigorous and healthy. It was interesting to note that this crop had been established over a vegetation of *Molinia*, *Calluna*, with some *Vaccinium* and *Ulex* species.

At 1,375 ft. elevation we again saw the failure of S.P. This time the vegetation was strong *Calluna* with a *Molinia* understory and the soil under a light layer of peat was considered good. This area had been beaten up last year with P.C.

In Compartment 14 we saw where a recent introduction of P.C. in beating up had been seriously damaged by deer. Mr. Mooney said that although there was no report of deer in the early years of establishment at this centre they had of late become a major problem. The Department now employ a trapper full time here and he has done good work in stemming the invasion and the situation is now under control. Mr. Mooney then went on to give a very interesting lecture on the different species of deer to be found in this country, their habits and the damage they cause. Messrs Chisholm, Fitzpatrick, Hamilton and Cremin also contributed valuable information from their own observations of deer and the damage they do at home and abroad.

## Dedication of Memorial Grove to Augustine Henry

ON Saturday, 29th September, the Society dedicated a grove to the memory of Dr. Augustine Henry at Avondale Forest School. The Dedication Stone was unveiled by the Minister for Lands in the presence of a large and distinguished gathering of members of our Society, friends and colleagues of Dr. Henry and members of the public. On the platform with our President, Mr. McEvoy and Mrs. Henry (widow of Dr. Henry) were the Minister for Lands. Mr. Tomás Ó Doirnín, the Secretary of the Department of Lands, Mr. W. F. Nally, Mr. Justice Martin Maguire, Mr. H. M. FitzPatrick and Dr. T. Walsh (Curator of the Botanic Gardens).

In the opening address Mr. McEvoy said that when the idea of commemorating the late Dr. Henry was first mooted it was agreed that a Memorial Grove was the most fitting tribute from this generation of Irish Foresters to the first great Irish forester. Through the generosity and co-operation of the Department of Lands the Grove had been established at Avondale Forest School and the Minister for Lands had graciously consented to unveil the Dedication Stone. We were also very happy to have with us for the ceremony Mrs. Henry who was her husband's constant companion and collaborator in all his works and travels.

In acknowledging even at this late date our debt to Augustine Henry we were merely following the lead given by China who as far back as 1929 dedicated to Henry a new wing of their famous Botanical Institute at Pekin. To him also they dedicated the second Fascicle of the Chinese National Herbarium.

Dr. Henry's interest in trees was aroused in China where he was impressed by the soil erosion and many other evils consequent on deforestation. Characteristically he threw himself wholeheartedly into the study of forestry and rapidly became an acknowledged expert. The fruits of his studies were the seven monumental volumes of "Trees of Great Britain and Ireland." This work, done in collaboration with H. J. Elwes, F.R.S., began in 1903 and ended ten years later in 1913, the year he came to Ireland as Professor of Forestry at the Royal College of Science of Ireland. He read almost everything published which was in any way connected with trees, he corresponded with authorities all over the world, and he carried out prodigious journeys of exploration to study at first-hand all the important tree species in their native habitats. In this way he developed an understanding of and a feeling for trees which has never been surpassed.

In 1907 a Departmental Committee sat on Irish Forestry. Dr. Henry was one of the expert witnesses examined. In his evidence he emphasised that our climate was closer to that of the Pacific coast than to that of continental Europe or even of Norfolk, and he concluded definitely that we should concentrate on planting the fast-growing

Western American conifers, D.F., S.S., etc. He insisted that continental yield-tables were not applicable to Ireland. He also maintained that S.P. was essentially a tree of continental climate and not really adapted to our conditions especially in the west. All these conclusions, unorthodox and even suspect in 1907, have been proved substantially correct by the present generation of Irish foresters and form the basis of current practice.

Forest-tree breeding is a very new science. Here again Dr. Henry was a pioneer. While at Kew he experimented in hybridising poplar, elms, alders, etc. The hybrid vigour of two of the poplars associated with his name, *Populus generosa* and *Populus vernerubens* was such that interest was stimulated in many countries and new horizons were opened for forestry. We cannot do better than quote the recent tribute by the eminent American geneticist, E. J. Schreiner: "Augustine Henry was the first forester to realise the possibilities of creating better forest trees by scientific breeding and he was the first forester to do something about it."

Augustine Henry was a medical doctor, a classical and oriental scholar, a distinguished traveller and botanist, a pioneer in forest genetics and a great forester. It remains to be recorded that he was also a great Irishman. He was always proud of his Irish ancestry which he traced back as far as 1121. In 1913 with the world at his feet he chose to come back to Ireland to establish the Chair of Forestry in the Royal College of Science of Ireland. Thenceforward he spent his talents lavishly in the service of his country and now his magnificent herbarium of 9,000 specimens is housed in the Botanic Gardens at Glasnevin.

Mr. FitzPatrick then spoke and paid tribute to Dr. Henry's work as a botanist and research worker. He stressed the accuracy and clarity of his botanical descriptions which have now become standard. He also spoke of Dr. Henry's thoroughness in his scientific work and of his attention to details. He instanced as an example of the former his travels to all parts of the world to observe, at first hand and in their native habitats, the trees he was studying, and of the latter his motto 'Label the moment you pick' to avoid any possibility of error. He then referred to Dr. Henry's originality as evidenced by his work on hybrids and forest tree breeding, in which work he was a pioneer, and also by his interest in untied species.

Mr. FitzPatrick, who was first a student and later a friend of Dr. Henry then spoke of the man himself, of his charming and endearing personality, his great understanding and tolerance, his modesty, in fact all the traits which made Dr. Henry the lovable person he was. He conjured up for us by a series of anecdotes a vivid picture of Dr. Henry. We saw him in his voluminous cloak, his papers clasped under his arm struggling to raise his hat to the charwoman on the steps of the College of Science. Or again when a Chinese attempted to dispose of his unwanted son (by drowning) we saw Dr. Henry, instead of disputing



the custom which allowed of this practice, calmly challenge his right to do so in front of his (Dr. Henry's) house and thereby disturb the peace and serenity of his view. When the native stopped to consider this new angle the son took advantage of his distraction to escape and Dr. Henry returned to his house chuckling at the success of his ruse. Yet again we saw the dignified Professor when engaged in a dispute on phrenology, while travelling by bus, endeavouring to prove his point by surreptitious measurements of the skulls of his fellow passengers, with a calipers which should properly be used for the measurement of trees. In short we saw Dr. Henry as those who were privileged to know him saw him and loved him.

The Minister for Lands then unveiled the suitably inscribed Dedication Stone. Having first paid a tribute to Dr. Henry, Mr. O Deirg said, "I am sure the work he (Augustine Henry) did in research, spreading the knowledge of scientific methods in forestry, will encourage our young men in the forestry service and all others who are interested, to encourage an informed public opinion as to the possibilities of extensive tree planting in this country as a means of building up a great natural resource."

In her reply, which was read by Dr. Walsh, Mrs. Henry said, "This would be a very happy day for Dr. Henry, surrounded by so much affection and remembrance—a remembrance so beautifully expressed, and completely after his own heart.

"Dr. Henry's special interest in trees took shape towards the end of his stay in China. He was for fifteen years in the Chinese Customs Service, stationed in remote places, sometimes where white men had not been before. To give himself interest and occupation he started collecting plants, sending them back to Kew for identification and preservation. He introduced into Europe five hundred new species, and twenty-five new genera. The number of specimens received at Kew amounted to 158,000.

"Before he left China his observation had been particularly awakened by the beauty of the trees. On his return to Europe, he went as a student to the French Forestry School at Nancy, and took a two years' forestry course. Coming back to England he settled at Kew to be near his collections. At that point, he and his friend, Mr. H. J. Elwes, F.R.S., decided to 'write a book on trees'—which, during the ten years of intensive research, developed into 'The Trees of Great Britain and Ireland' in seven volumes. For the study of the trees themselves, Dr. Henry was only content if he could see them in their own homes; and for twenty years after our marriage we continued travels all over Europe—poplars in Scandinavia; larch in Poland, Silesia, and the Engadin; spruce in the Serbian mountains; elm over Northern Italy, Southern France, and Spain.

"In 1907 Dr. Henry had taken up a post, newly established as Reader in Forestry at Cambridge University, where he remained for

six years. Shortly before that, in 1904, the Department of Agriculture had started forestry in Ireland, and Mr. A. C. Forbes took up his residence at Avondale. In 1913 Dr. Henry accepted an invitation to come over to Ireland as Professor of Forestry, saying at the time that he would like to do some work for his own country. This was just before 1914, and, for a while, it was impossible to go abroad for collecting, but as soon as movement was re-established, he travelled again; and continued till within 18 months of his death.

"The dried collection of tree specimens he assembled during those years while at Cambridge and here, now belongs to this country—known as the 'Augustine Henry Forestry Herbarium'. It is at Glasnevin Botanic Gardens. Through the years 1931-39 I classified it, and Dr. Walsh has catalogued it.

"While in China Dr. Henry made many friends; he spoke Chinese fluently, and his study of their classics endeared him to them greatly. They did not forget him. There is in Peking the Fan Memorial Institute of Botany and Biology. In 1929, almost thirty years after he had left China, they dedicated a new wing of the building 'To Augustine Henry, through whose assiduous botanical exploration of Central and South Western China, the knowledge of our flora has been greatly extended.'

"Now it is another 21 years since his work here was finished, and you have all kept his memory green—now and into the future, in this beautiful memorial grove, with its dedicatory tablet. This honour that you have shown him, would have pleased him more than all the others, for it is within his own country, and from his own people."

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## COVER

Our cover photo shows a Scots Pine framed by sessile oak and was taken in the native oak woodland area near Torc Waterfall, Killarney.

# Excursion to Athy

Report by W. SHINE.

ON Saturday the 13th October 1951 occurred one of the most interesting and enjoyable of our short excursions when our Society visited the Wallboard factory at Athy at the invitation of the Irish Wallboard Co. Ltd.

Mr. Shackleton accompanied by the senior members of his staff received the Society on the factory grounds. Each member was given a typed hand-out explaining the various processes in the manufacture of wallboard. Then the party was organised into small groups and shown over the factory.

It is interesting to know that wallboard manufacture was started on 15th May 1951 when the Bowater Corporation purchased a controlling interest in the Company which had been successfully manufacturing strawboard since 1949. Inadequate supplies of straw sounded the death knell of that industry.

The turnover to Wallboard manufacture was far-sighted, enterprising, and courageous and to-day this factory employing 180 men and with machinery worth more than £500,000 is producing 150 tons of wallboard per week; the Company hopes to reach the 200 ton mark shortly. With an English export market and an ever increasing home demand the company has every reason to be optimistic and proud of its achievements so far.

The first casual glance around the factory was one of amazement at the enormous quantity of logs stacked so neatly in the factory yard. Equally surprising was the speed and efficiency with which the logs were converted into chips in the chipper machine and then conveyed by a belt arrangement into the factory proper where the process really commenced.

Inside the factory members showed great interest in the very up-to-date machinery which pulped, churned, rolled and in a relatively short space of time turned out beautifully polished wallboard. The efficiency and meticulousness with which samples were tested in the laboratory was noted with admiration and it was not surprising that wallboard is becoming more popular every day. It was evident to all that a uniformly high quality board must result when such careful checking is carried out.

It was interesting to learn that a wide range of species can be used in the process. The following classification indicates the relative importance and suitability of the various species used:—

*CLASS A.*—(Can be used 100% for Board manufacture)

Sitka and Norway Spruce, Douglas and Silver Fir, Scots, Austrian and Corsican Pine, European and Japanese Larch, Willow, Aspen, Poplar.

*CLASS B.*—(Can be used 50% with Class A.)

Alder.

*CLASSES C & D.*—(Can be used 25% with Class A.)

Sycamore, Ash, Beech and Birch.

The wood should be fresh, sound, free of all rot and reasonably straight, knots, limbs and irregularities must be trimmed off and the logs cut squarely at the ends. The logs must not be shorter than  $3\frac{1}{2}$  feet nor longer than 15 feet while the diameter must not exceed 7" nor be less than 2".

The Company pays the following prices per ton for material delivered to the mill:—

£4	0s.	0d.	for distance up to 60 miles.
£4	5s.	0d.	„ „ 60/80 miles.
£4	10s.	0d.	„ „ over 80 miles.

The significance of the above details was not lost on the members and the far reaching effects of this bold venture were the subject of lively discussion. Its revolutionary effect on forest economics was fully appreciated and it was clear to all that because coarse timber and small thinnings were eminently suitable the stock of commercial timber in the country would not be adversely affected, in fact it would be conserved to a certain degree. It was fully realised that a steady market for forest thinnings had at last been established. In addition many labour shortage problems have been solved in remote forests since the Wallboard Company has undertaken the felling and extraction of thinnings. It was particularly gratifying to the foresters, the growers of the raw material, to see that such a beautifully finished product could be produced from the hitherto almost unsaleable small thinnings. They realised that this closer utilisation of timber would have the effect of increasing the value of our young plantations and poor quality old plantations as well as the low quality class sites generally.

These and many other aspects were discussed enthusiastically and it was heartening to hear that forest thinnings are ideal for the process. It was satisfactory also to hear that the factory uses 40 tons of turf daily in the huge steam boilers and the employment created indirectly must be considerable on this account.

The factory staff entertained the members to tea in Bradbury's Cafe in Athy when the tour of the factory had ended. The gay spirit which pervaded the tour generally heightened as the crowd mingled freely, chatted gaily and renewed old friendships at the running buffet.

After the pleasant meal Mr. McEvoy thanked the Factory Officials on behalf of the Society for their kindness in providing such an interesting and well-organised excursion. Mr. Shackleton replying on behalf of the firm stated that it was a pleasure to meet such an enthusiastic body and to note the interest shown in all that had happened.

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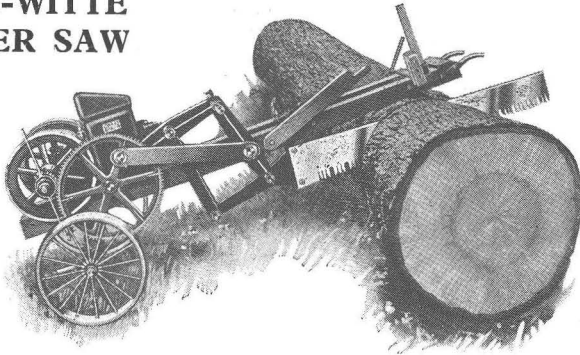
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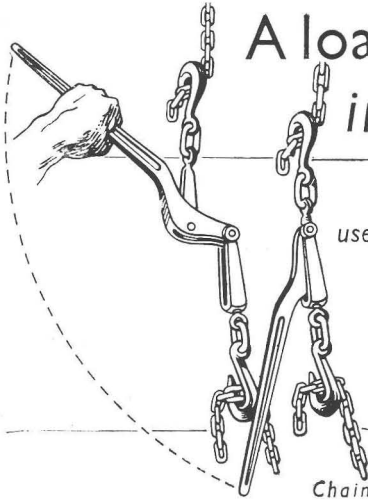
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Date.....

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## CONDITIONS OF MEMBERSHIP (EXCERPTED FROM THE CONSTITUTION)

Article V.—The membership of the Society shall consist of two Orders, namely: Technical and Associate.

TECHNICAL MEMBERS shall be persons desirous of promoting the object and at the time of election resident in Eire, who are employed for their whole time in forestry or any branch of natural science closely connected with forestry, or who have been so employed for at least five years, or who, though not so employed hold a degree or diploma in forestry of a recognised University or College, in all cases subject to the approval of the Council.

TECHNICAL MEMBERSHIP shall be divided into two grades, namely:—

Grade 1—Being Forestry Inspectors; professors, lecturers, graduates or holders of diplomas of Universities or Colleges; Head Foresters, and others of an equivalent status.

Grade 2—Being Foresters, Foreman Foresters and others of an equivalent status, including students at Universities or Colleges, not being restricted to Grade 1.

ASSOCIATE MEMBERS shall be persons desirous of promoting the object but not qualified for technical membership, subject always to the approval of the Council.

Members shall subscribe annually to the Society's funds according to the following scale of subscriptions:—

Technical Members, Grade 1, shall pay	...	...	£1	0	0
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