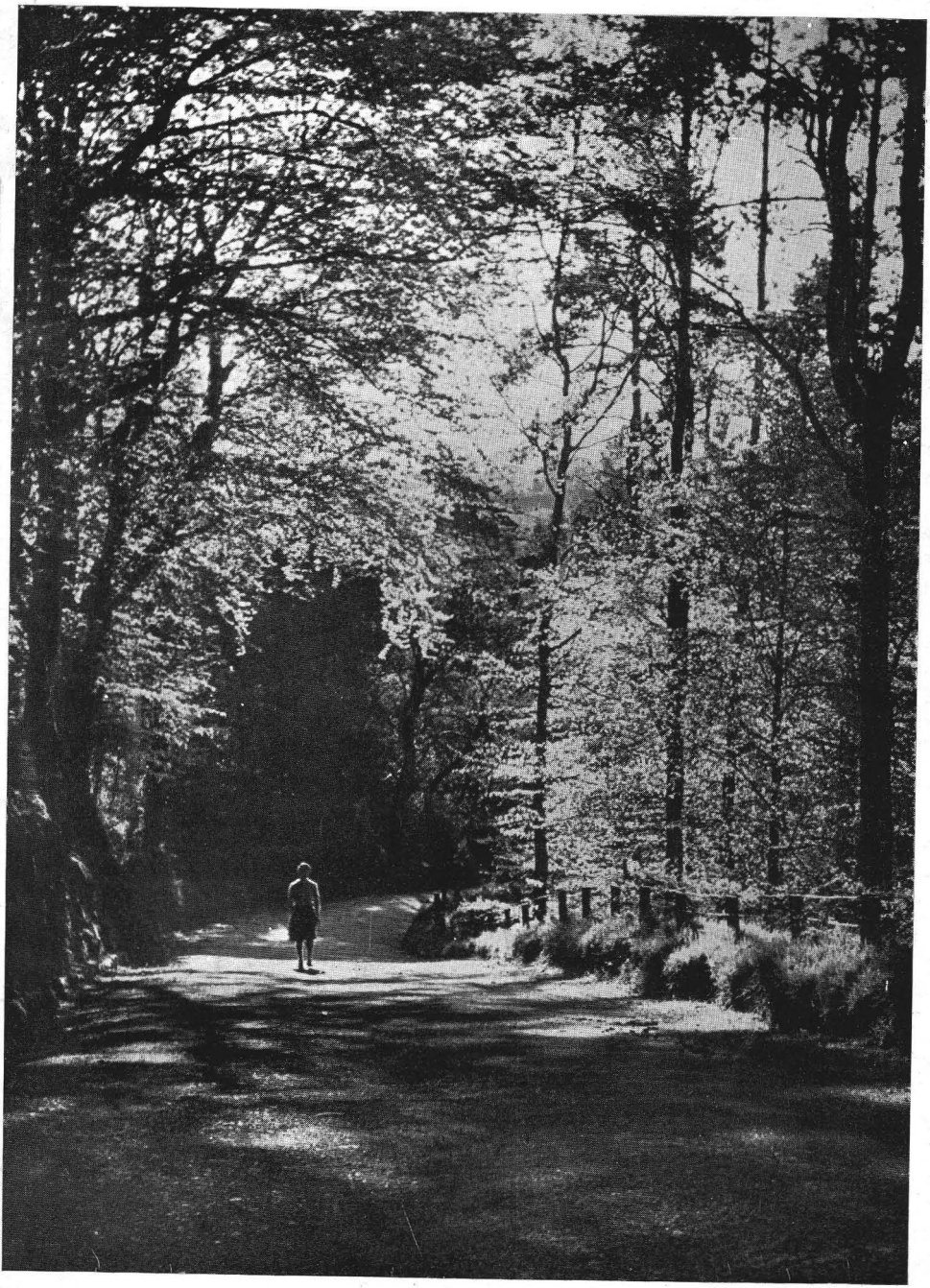
IRISH FORESTRY



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IRISH FORESTRY

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THE NECESSITY FOR A FOREST POLICY

By F. T. MOREHEAD, O.B.E., B.Sc., I.F.S. (Burma), Retired.

The Forest provides man with some of his most essential raw materials. To-day wood and other forst produce is being put to wider uses and is in greater demand than ever before. The Forest is beneficial in other respects; it protects the land against soil erosion; it conserves water supply and the flow of streams, it provides means of reclaiming swamps, and it protects, and in some cases has saved from extermination, some of the world's most interesting fauna. The Forest has a great recreational value and is an aid to health. And not least of all the Forest has permeated and inspired Music, Art, and Literature in almost every country in the world. A country which has lost her forests has lost something more than purely material advantage.

Mines, oilwells, and turf-bogs are also sources of raw materials but are dead things and end in exhaustion; they cannot be renewed. Policy formulated for their working must be limited by this fact. The forest, on the other hand, is a living community which, with wise treatment, may be maintained in productivity for ever.

Treat a forest like a mine and you'll get the same end result—a derelict waste. But there's a difference, for, whereas the mine is finished for good and all, the forest, even though exploited to destruction, can be re-created provided favourable soil and climatic conditions still remain, and given time, money, knowledge, and above all, wisdom.

Forests are products of the soil, but Forestry differs from Agriculture and Horticulture in that it deals with wild plants which have been little modified by cultivation, and in its being essentially a long-term enterprise. To be properly grown a forest requires skilled management throughout its life; neglect or incompetence in its early days may result in total loss; at later stages in loss both in the quantity and quality of timber produced.

A properly organised forest should fulfil two main conditions: it should furnish regular annual out-turns in perpetuity, and it should produce the maximum out-turn which the soil and climate are capable of producing. A forest fulfilling these conditions is

said to be organised on the principle of the *maximum sustained yield* and, unless there are special indications to the contrary such as where the protective value of a forest must take precedence to its supply value, this should be the ultimate aim of all sound forestry, however distant may appear the prospect of attainment.

Forest Policy is essentially a part of a wider policy of land utilization and it should be considered with due regard to the claims of agriculture, animal husbandry, and other purposes for which land is required. It has been suggested that a pre-requisite to the effective planning of the use of land would be a Land Utilization Board, constituted by the State, and on which all interests should be represented, to decide the use to which all land is put. Too often in the past has haphazard alienation of potential forest land involved a country in vast expenditure in its repurchase.

Forestry has a horizon beyond the limits of a lifetime and demands vision in its direction; it is a big subject in terms of land, finance, and the time factor and it is only natural therefore that, in most countries, it has come to be identified with State ownership and control. The degree of control exercised by the State usually depends on the extent to which forests are essential for protective purposes or for safeguarding a country's future supplies of timber and forest produce. The enormous inroads made into the world's timber resources by the two great wars have meant that no country can to-day afford to have its forests, or its potential forest lands, in an unproductive state. When large-scale afforestation becomes necessary heavy expenditure is involved; for instance, under Britain's Post-war Forest Policy it is estimated that the afforestation of 1,1000,000 acres during the first ten years of the plan will cost £41,000,000 Nett.

The ultimate aim of all State enterprise should be the benefit to the people. Usually the people themselves are quick to assess the value of State undertakings and, when they consider it necessary, to criticise in no uncertain terms. In familiar services like Post and Telegraphs, Transport, Police, and Electricity, lack of vision in direction, or incompetence in working, soon become apparent to all and are felt as long as they continue; they can be remedied relatively quickly and usually without prejudice to the welfare of future generations. Not so in Forestry. The people see little of forest work and often understand less. Forestry is apt, therefore, to escape that critical and salutary appraisal the public bestows so readily on other, but more familiar, State enterprises. Errors in Forest Policy or management which may not be very apparent at the time may be fraught with most serious consequences later. An old saying recalled by my friend, Mr. Beresford Barrett, recently in the Societys journal, runs : " A DOCTOR buries his mistakes. A FORESTER is buried before his are found out! " But the main danger lies not in the mistakes of the forester. It lies in misguided or sterile Forest Policy, examples of which abound all over the world . . . derelict waste lands . . . countrysides without

tree shelter . . . hills without soil . . . streams without water . . . and the unlovely picture of people reduced to a " Cowdung and Corrugated Iron " domestic economy for want of firewood and timber.

In this roughly sketched background may be discerned two signposts towards a sound Forest Policy :—

I. The subject should be approached from an angle of its own and with full appreciation of its long-term nature and the absolute necessity for continuity;

II. The aim should be to bring to this and future generations all the benefits that Forestry can provide. To achieve this it is of the utmost importance to create an intelligent and critical public interest in Forestry.

And one might well add a warning sign with the words : " Forestry is a good cause but it can be damaged by false reasoning and mistaken conclusions, however well meant."

Sooner or later all countries are forced to recognise the necessity for laying down a sound Forest Policy. In some this fact has been realised whilst considerable tracts of the natural forests still remain and in these the main concern is to conserve and bring under proper management existing forest tracts; in others it has been realised only after the natural forests have been to a large extent, or wholly, destroyed, and here the problem is the long and expensive one of re-creating the forests.

In France and Germany the importance of proper forest conservation and management was appreciated over three centuries ago. I remember being immensely impressed by the long-term character of French forestry when, just after War No. I, as students working in the magnificent oak, beech, and hornbeam forests of Troncais, we were told that these forests had been managed under a Working Plan drawn up in the time of Colbert, about 1675. Other recollections of French forest tours, with a bearing on policy, include those admirable communal and village forests. These were owned by the commune or village and managed by a forester lent from the State Forest Service. Not only did they provide their owners with free supplies of timber, firewood, and charcoal, but also, by sales to outsiders of forest produce, they provided funds for works of communal benefit such as schools, churches, recreation halls, and such-like.

And there was the working plan for the sand dune reclamation forests in the Ile d'Oleron on the Biscay coast. This was the kind of competent and practical forest plan one expects in France. It provided for the usual working circles—one for timber supply, one for firewood, one for resin tapping, and so on, but there was an additional point of interest: it had an Aesthetic Working Circle devoted wholly to the improvement of the landscape and the general amenities of the forest for local people and the many visitors who came there in the summer. The French are a practical people.

Nineteen per cent of the total area of France is under forests and of this 14 per cent is owned by the State, 21 per cent by public bodies, and 65 per cent by companies and private individuals. State control of forests under other ownership is light in France, except in the case of protection forests but plantations on mountain tops and slopes and on sand dunes are exempt from taxation for thirty years and on burnt-out areas for a period equal to the age of the wood destroyed with a limit of twenty years. Private owners may, on request, have their forests managed by the State under contract for a period of ten years upwards. It is well appreciated on the continent that properly managed forests are good investments yielding steady returns and offering good security.

Denmark is an example of a country which exercises strict State control over private forestry. In 1805 a Forest Law was introduced placing all existing forest lands, by whoever owned, under reservation and providing for their cultivation as high forest. In 1935 the Forest Law was amended and brought up-to-date and the degree of State control over private forests clearly defined. The management of private forests must be carried out under the direction and advice of State Forestry Inspectors. The buyer of a forest may not do any felling for ten years after purchase except that permitted by the inspector for the domestic needs of the estate or for the proper management of the forest. This aims at reducing speculation in woodland. Provision is made for arbitration between owners and the State by the institution of a committee consisting of three Government representatives and four representatives of the various private owners' associations. The late Professor Troup, in his work, *Forestry and State Control*, remarks, after personal experience of Danish forestry, that, in spite of the strict degree of control, there are remarkably few complaints from forest owners and the flourishing condition of the forests testifies to the efficacy of the law which operates with little friction. Nine per cent of the total area of Denmark is under forests and of this 24 per cent is owned by the State, 29 per cent is under communal ownership, and 47 per cent by private owners.

The first declaration of Forst Policy to be made in the British Commonwealth was that of India, which then included Burma, in 1894. It may be of interest to follow the train of events in Burma, a country in which, as a forester, I have had the good fortune to spend a large part of my life.

Burma has in her great teak forests one of the world's great natural assets. From the earliest times teak has been prized as the most stable and durable timber. In 1826 when the British went into Lower Burma the Admiralty had for some time been running short of home-grown oak for the Royal Navy. The apparently inexhaustible supplies of teak in the Burma forests were a real godsend. But they weren't so inexhaustible as they seemed and between 1826 and the middle of the century farseeing people had at various times urged the Government of India to introduce

effective control over extraction. But for a long time the Government, as governments so often do, did nothing. It was true that felling licences contained a minimum girth and a compulsory planting clause but these, in the absence of adequate supervision, weren't worth the paper they were written on as far as forest conservation was concerned. And the Moulmein timber traders made hay whilst the sun shone. But the destruction of the teak forests went on. And then at long last, in 1855, the Government announced its intention to enforce supervision over felling and extraction and in 1856 Dr. Dietrich Brandis was appointed to the charge of the Burma forests.

Brandis, a German, was the first scientifically-trained forester to come to Burma. He was a great forester and a man of outstanding ability and drive. He convinced Government of the importance of working the forests on the principle of the sustained yield and of the necessity for a properly-trained forest service. He initiated the first forest working plans in Burma. From the day of Brandis's arrival forestry never looked back in India and Burma and he has well earned the title of " The Father of Indian Forestry."

It should be appreciated that the main problem in Burma was not the creation of new, but the conservation,, improvement, and proper management of existing natural forests of great value. In 1894 the Government of India made its declaration of Forest Policy which has held good for both India and Burma upto the present day. This somewhat lengthy, but incidentally beautifully worded document, has been aptly summarised as follows: —

" The main object is the greatest good to the greatest number, attained by the following general principles—

(a) that the preservation of the climatic and physical conditions comes before anything else,

(b) that the preservation of the minimum amount of forest necessary for the well-being of the country is second only to (a).

Provided the above two conditions are fulfilled then,

(c) Agriculture comes before Forestry,

(d) the satisfaction of the needs of the local people free, or at cheap rates, comes before revenue, and

(e) after all the above conditions have been satisfied the realisation of revenue to the greatest possible extent, compatible with the principle of a sustained yield, is permitted."

At the time of the Japanese invasion in 1942 Burma had 35,000 square miles of Reserved Forests and eight wild life sanctuaries covering 700 square miles. Over 80 per cent of the Reserves were worked under detailed prescriptions of Forest Working Plans sanctioned by Government. These working plans constituted a definite part of the implementation of the Forest Policy in that they ensured continuity of management and the

methodical collection and recording, year by year, of all important information concerning the forest tract to which they referred. Organised systematic forest research started with the establishment in 1906 of the Imperial Forest Research Institute at Dehra Dun in India with sections dealing with Silviculture, Working Plans Entomology, Botany, Chemistry, and all branches of Utilisation. Burma had in addition her own local research officers in Silviculture, Working Plans, Entomology and Utilisation working in close co-operation with Dehra Dun. It is of interest to note that after the political separation of Burma from India in 1935 Burma still continued to subscribe to and retained her full pre-separation connection with forest research at Dehra Dun.

And now to come nearer home. Before War I the United Kingdom, including Ireland as it did then, had no Forest Policy. About 97 per cent of the 3,000,000 acres of existing forest was privately owned. The war caused heavy inroads into these not very large timber resources and in 1919 H.M. Forestry Commission was constituted to deal with the situation; the formation of the new Irish Free State put Ireland outside the scope of the Commission's activities from 1922.

In spite of a serious lack of finance between the two wars, by 1939 Britain had acquired a forest estate of 700,000 acres of which 434,000 acres had been put under woodland; private owners with the aid of Government grants had planted an additional 126,000 acres. In 1919 a Research Branch was set up consisting of forest officers dealing with Silviculture, Rate of Growth and Production, and an Entomologist and a Mycologist; it was the duty of the chief research officer to keep in close touch with executive officers to ensure that no important problems were being overlooked.

Hitler's war brought a second great exploitation of British woodlands, but the Forestry Commissioners lost no time and by the beginning of 1943, whilst the war was still at its grimmest, produced an extremely competent survey of the whole position of British forestry, past, present, and plans for the future in a report on *Post-war Forest Policy**" This report should be read by anyone interested in forestry as a model review of the facts on which a Forest Policy is based. The report was accepted by Parliament in 1946. It envisages within 50 years the rehabilitation of 2,000,000 acres of existing woodland and the afforestation of 3,000,000 acres of bare ground with an ultimate objective of 5,000,000 acres of effective forest. It is considered that, although the ultimate yield of 5,000,000 acres will represent only about 35 per cent of Britain's requirements calculated at present levels of consumption, it will, nevertheless, provide a vital reserve of timber for the emergency of war. The plan provides for the continuance of research on a greatly enhanced scale. In respect of education in forestry it estimates that 30-40 Forest Officers (University) and 200-250

* " Post-war Policy "—Report by H.M. Forestry Commissioners. H.M. Stationery Office, York House, Kingsway, London, W.C.2. Price 2s.

Foresters (Forestry School) will have to be recruited every year for the State Forest Service. On the amenity side proposals are included for the addition of twenty national parks during the first ten-year period and for the continuance of the most successful wartime practice of bringing schools out to holiday camps in the forests where boys may enjoy the novelty of camp life and do useful work.

In Britain control over private woodlands is provided for by the Dedication of Woodlands Scheme. Under this private owners are given financial and practical assistance by Government in return for an agreement to use the land dedicated in such a way that timber production is the main object and to work to a plan of forestry operations approved by the Forestry Commissioners. When the scheme was first put forward private owners were unwilling to commit themselves owing to alleged inadequacies of timber prices and of planting grants, the arbitration clause, and the apparently irrevocable nature of the draft agreement. Negotiations went on between the Commission and the United Kingdom Forestry Committee—which represented the several forestry societies and the private owners—and all points of contention were satisfactorily settled early in 1950 and the scheme should now forge ahead. Planting grants have been increased to £12 an acre, maintenance to 4s. per acre annually, provision has been made for an entirely independent arbitration committee, and for an owner to secure the release of his woodland from dedication, under certain conditions.

His Majesty's Forestry Commissioners emphasise five prerequisities for the success of British Forestry:—

1. Recognition by Government of the importance of timber production at home.
2. Continuity of National Policy including finance.
3. An *ad hoc* authority with the duties of formulating policy for Government.
4. A unified Forest Service, highly qualified in the professional sense and imbued with a keen *esprit de corps*.
5. The provision of adequate services for Research, Education and Information.

Lastly, let us consider the state of Forestry in our own country, Ireland.

A reference to Irish Forest Policy is contained in the last report on Forestry by the Minister of Lands for the period 1938 to 1943. It reads as follows:—

"The forest policy remains as laid down in previous reports, namely, to create a home supply of raw timber sufficient to meet home requirements, as far as it is possible to grow in this country the kind of timber required. It has been estimated that the total national objective of both State and private woodland should be 700,000 acres of afforested land, including 100,000 acres of protection forest and 600,000 acres of productive forest."

The Forestry Act, 1946, is an Act "to make further and better

provision in relation to Forestry." In addition to provision for acquisition, planting, general and limited felling licences and other clauses dealing with control of private woodland, the Act empowers the Minister of Lands to establish a Consultative Committee to advise and assist him on forestry matters; and to undertake the collection, preparation, and publication of statistics; to make experiments and research as he thinks fit for the purpose of promoting forestry, and to disseminate information likely to arouse, stimuate, or increase public interest in Forestry.

Education in Forestry is provided by the well-known and highly successful Foresters' School at Avondale, County Wicklow, and by the Degree Course in Forestry (B.Agr.Sc.) offered by the National University of Ireland at University College, Dublin. Since the degree course was inaugurated only about half of those graduating have been able to find employment in Irish forestry; at the present time there is only one Irish student taking the course.

In 1947 there was approximately 130,000 acres of State owned and 91,000 acres of privately owned forest, a total of 221,000 acres or 1.3 per cent of the total land area of Twenty-six-county Ireland. This 1.3 per cent of tree-covered land is far from being fully productive forest consisting as it does largely of recently heavily exploited older woods and immature plantations. We have the deplorable distinction of having a lower percentage of forests than any other country of western Europe, e.g., Germany 24 per cent, Switzerland 23 per cent, France 19 per cent, Belgium 18 per cent, Denmark 9 per cent, The Netherlands 8 per cent, and Britain 5.5 per cent. The fact that our forests are small in area should not, however, blind us to the debt we owe to the enterprise and enthusiasm of private owners in the past, and to a young forest service which has achieved most successful results within the limited finance provided. Those who have followed the tours arranged by the Society of Irish Foresters well know what excellent woodlands skilled silviculture has produced in our soils and climate.

The passing of the comprehensive Forestry Act of 1946 and the recent announcement by the Minister of Lands that Government proposes to step up the annual planting programme to 25,000 acres and the overall target to 1,000,000 acres indicate that Ireland is at long last on the eve of big developments in Forestry; developments which if wisely planned will have a profound effect on the future welfare of the country.

Well, I have tried, in the compass of this paper, to sketch for you a general background to Forest Policy, and to illustrate how some other countries have tackled their forest problems. May I, in conclusion, pick out some of what I consider are the highlights in the approach to a sound Forest Policy:—

1. If you're going to have a Forest Policy at all don't be shy about it. Issue it in the shape of a clearly-worded, formal declaration, widely published and frequently reiterated.

2. Recognise in the declaration of policy that continuity, unaffected by political or other changes, is essential to sound forestry and assure sufficient funds to carry out the accepted policy over a period of years.

3. Give the people in an easily understandable form all the facts and figures on which the policy is based. Competent Public Relations in Forestry are essential to arouse an intelligent and critical public interest.

4. Aim at giving the people *all* the benefits of Forestry; not merely timber and protection. Aesthetic and recreational possibilities deserve an important place as aids in restoring a long-lost forest consciousness and appeal particularly to the young; the people who matter most.

5. Consider Forest Policy with due regard to other uses of land and in relation to social and economic needs. If in some cases silvicultural considerations have to be subordinated to other needs, e.g., the afforestation of poor soils in the West, say so.

6. Make provision for Research and Working Plans as integral parts of Forest Policy. Working Plans because they are essential not only to ensure continuity of management but also because they provide for the methodical collection and record of all relevant information about the tract to which they refer; information that is often neglected and seldom readily available when urgently wanted. Research because it provides for the expert sifting and recording of knowledge already gained and for the properly co-ordinated investigation of exising and future problems.

7. Don't ignore Private Forestry or leave it to sink or swim under nothing more than the felling and replanting clauses of a Forestry Act. The rehabilitation and proper management of private woodlands demands the same certainty in future action as does that of State forests; and the ultimate responsibility for this must fall on the State.

8. And finally, in respect of Education in Forestry, provide for the highest possible standard of technical training within the State Forestry Organisation, and for close co-operation with the Universities whose role it must be to supply in adequate numbers men of high professional qualifications in forestry.

In putting a Forest Policy into effect no other single consideration equals in importance the human factor. Scales of pay, conditions of work and service, housing, and amenities must be sufficiently attractive to secure the right type of young men; and there's only one right type for Forestry, the best.

Forestry is a good cause. Here in Ireland are all the ingredients of success. Let us make success certain and complete by following a wise and resolute Forest Policy.

BIRDS IN THE FOREST

By M. O'BEIRNE, B.Sc.

Birds play an important role in the life of the forest. In fact it is doubtful if forests could long exist without them. In the absence of birds trees would soon become obliterated by the ravages of insects and their never-failing followers—fungi.

Periodically we read of insect epidemics responsible for the destruction of thousands of acres of woods, incidental to the destruction of birds by severe Winters preceding. For instance, in the years 1918 to 1922, 90,000 acres of conifer woods were destroyed by the Nun Moth in Central Europe, and this would appear to be closely associated with the destruction of birds caused by the severe Winter of 1917; and we all remember the onslaught by chermes on trees and other plants and the wiping out of vegetables by caterpillars in the Summer and Harvest of 1947. This, no doubt, was due to the havoc caused amongst the birds by the memorable frost and snow which lasted eight weeks in the Spring of 1947.

Birds are the only effective natural agents we have to prevent the rapid increase of insects. The gardener can protect his fruit trees to some extent by spraying with insecticides, but the spraying of the forest would be well-nigh an impossible task. Consequently, birds are indispensable, but it is not in this respect alone that birds are useful. They render life in the forest more interesting, and delight the ear with their sweet songs. They are weather and season guides. The cuckoo sounds the first note of Summer and on the approach of rain " Low o'er the grass the swallow wings."

We are indebted to the birds for the distribution of the seeds of many trees and shrubs, such as Mountain Ash, Whitebeam, Holly, Whitethorn, Cotoneaster. The Red Bearberry (Arctostaphylos Uva-ursi), a beautiful creeping shrub found in the West is a native of the Mountains of Central Europe, where the bears are said to feed on its berries. Its seeds, no doubt, were carried by birds and deposited in their new and congenial home amongst the limestone crags of Burren and the rocky hillocks of the bogs of Connemara.

Some years ago, myriads of starlings, after their daily toil on the farm lands of Clare and Limerick, began to congregate at night in the young spruce forest of Kilrush on the Atlantic Coast (the only forest in that vicinity). So numerous did the birds become that it was thought that serious damage would be caused to the forest by their droppings. Some trees did suffer from incrustation on the foliage, but so great was the resulting fertilization of the ground that the trees soon began to show extra growth and vigour and were better able to stand up to the Atlantic gales.

Even birds normally looked upon as destructive have their uses. For instance, the Crossbills, which come from Northern Europe in the Winter, break up cones of Scots Pine, larch and

other trees, to feed upon the seeds. In the disintegration of the cones many seeds escape and fall to the ground and thus contribute to the natural regeneration of the woods.

On the Continent it has long been the practice to attract birds to the forest by the erection of nesting boxes on the trees. In Germany various species of insectivorous birds are catered for in this way, but it was only in comparatively recent years that the practice was taken up in this country. In the Spring of 1944, the Forestry Service sent out 20 boxes for erection at Avondale.

The boxes used are of the Westphalian type 7" x 9", 10½" high at back and 9½" high in front with roof 10" x 9". Entrance hole 1¼" in diameter is in the door on the side. They are intended for small birds only.

The boxes were erected on 1st March on different species of trees and in different positions. On examination on 15th May, 75% of the boxes contained nests with eggs. Some had as many as eight eggs and broods were hatched out later in all cases. The occupants were mostly tits, but there were a few tree creepers.

At the end of the Harvest, the boxes were taken down, cleaned and stored until Spring, when they were re-erected. The results were somewhat similar in the following years until 1947 when the percentage fell to 50, due no doubt to the havoc caused amongst the birds by the great snow in the Spring of 1947.

The boxes best patronised were those erected on old beeches in the vicinity of dwelling houses, those in more backward situations being less favoured.

It is to be hoped that the Forestry Service, seeing the success of this experiment, will extend the good work to other forests and that private individuals will be induced to take up the matter and give more attention to the preservation of birds.

After The Storm

(TO A FALLEN BEECH TREE)

How many eyes have seen, beloved tree,
Thy slow, determined, planned ascendancy;
How, midst all else astruggling to be free,
You win the race and gained the mastery?

How many hearts have seen thy beauty swayed,
Tossed by the winds? And still you held your own!
Bearing each strain you faced Life unafraid
Until the Devil raged and flung you down.

Yet, for the joy you've been 'pon Earth's sad face,
From thy true seed—the unmasting winds did strew,
Some day will stand a beech-grove in thy place—
When I am gone—have had my day—like you.

Ashtown, October, 1945.

Sport In The Himalayan Foothills Of Nepal

By E. A. SMYTHIES, C.I.E., I.F.S. (retd.)

Nepal, as everybody knows, is an independent kingdom tucked away in the Himalayas, the home of Everest, the famous Gurkhas, and " the green eye of the little yellow God "; it includes the birthplace of Buddha; a land of mystery and romance whose frontiers are closed to all foreigners (except by special sanction of the higher authorities). It covers an area of 50,000 sq. miles and has a population of between five and six million, split up into an astonishing number of different tribes and sects, with a score or more of quite distinct languages, all mutually unintelligible.

It is interesting to note that Nepal has within or on its boundaries 26 peaks of over 24,000 feet, which include 12 of over 25,000, eight of over 26,000, three of over 27,000, and the one and only mountain in the world over 29,000 feet. Such an agglomeration of high peaks makes Nepal unique amongst all the countries of the world. Below the great range of perpetual ice and snow there is a continuous belt along the southern boundaries of foothills and Terai, covered with dense forest and swampy savannahs and intersected by mighty rivers and their tributaries. It is this zone which chiefly concerns this article, a sportman's paradise where tiger and leopard, wild elephant and rhino live, and the fisherman can catch the mighty mahseer in the roaring rivers.

In this article I will describe briefly four different types of sport: (1) Tiger shooting in a " Ring "; (2) Catching wild elephants alive; (3) Studying rhinoceros (these are strictly protected and seldom shot); (4) Fishing. These are all forms of sport which I have experienced during my seven years residence in Nepal.

(1) *Tiger Shooting in a Ring.* This method is almost invariably used in all big shoots, organised by the Maharaja for his friends and distinguished visitors on a lavish and wonderful scale. For weeks before the shoot commences, rough but serviceable motor roads and temporary bridges are constructed radiating out from the various jungle camps. All the jungle paths and streams and sandy river beds are examined to see where the tigers are, for in such places they leave their footmarks. A day or two before the shoot starts, young buffalo calves are tied up as bait, in scores or even hundreds, on every likely route a tiger may take. (The cow, being venerated, its progeny cannot be used for tiger bait.)

There are seven or eight groups of regularly appointed shikaris, each consisting of an officer (*subedar*), ten or twelve subordinates, and two mounted soldiers for taking messages. Every group of shikaris has ten to fifteen buffalo calves (*padahs*) for tying up at suitable places. They live in temporary sheds in the jungle, primitive huts of wooden poles, leaves, and jungle grasses fastened with

strands of creepers, which they quickly erect with their kukris from the abundant material all around. Between them the various groups cover the whole tract of forest for miles around the central camp.

At dawn the shikaris go out and examine the *padahs,* tied out the previous evening. If or when one has been killed, they carefully examine the pugmarks (footprints) to see if it is a big tiger or small, or one or several. They examine the drag and the direction taken. They then proceed quietly on foot and make a large circle of a quarter to a half mile diameter, demarcating the circumference with chipped stems and grass knots as they go, and are very careful to see that the drag has not gone beyond the circle. If it has, they make another one, as they must have the circle enclosing the end of the drag. This is called " cutting the circle " by the shikaris, and the final circle makes the future " Ring."

Meanwhile, as soon as it is seen that a *padah* has been killed and dragged, a special messenger mounts his horse and gallops off to bring the *khabbar.* Sometimes motor cars are parked at central spots to accelerate the delivery of the news, and sometimes even a telephone line has been prepared and operators engaged to flash messages to the camp.

Within a very short time the news has reached the camp from all directions whether and where there are kills, and the day's plan of campaign is discussed and settled. Immediately a great string of 200 or 300 elephants move off in single file to the first kill, a few with howdahs, the majority with pads. The shooting party follow at leisure in cars as far as possible, and then on pad elephants.

The tiger or tigers have been approximately located by the shikaris from the direction of the drag, the nature of the cover for lying up, and the process of cutting the circle as already described. When the elephants arrive, they divide into two parties, which proceed very quietly in single file right and left along the line of the cut circle—and it is astonishing how quietly an elephant or line of elephants can move through the jungle. The rear elephants gradually drop out to take their stations at regular intervals, and finally the two leading elephants meet, and the word is passed down both sides that the circuit is completed, *" lam pugyo."* Then the order *" Mudi phira "*—turn the heads inwards—is passed down.

The shooting party mount the elephants, and the whole circle now move inwards, crushing the grasses and shrubs, and the men on their backs shouting and whistling to drive the tiger towards the centre. The circumference of the circle of elephants gets smaller, until finally it is less than half a mile round, and the elephants get closer and closer until they are almost touching, and the tiger is surrounded by a solid wall of elephants. Then the order *" Lamtham "*—stop the line—is shouted out, and the ring is complete.

The stauncher elephants then move into the ring. Glimpses of one or more slinking forms are seen in the grass and undergrowth, when suddenly a tiger breaks cover and charges with a roar, to be

met by shots from the rifle, or shouts and missiles if he charges the ring. It is the moment of climax of a culminating excitement. Backwards and forwards he dashes striving to find an escape, to a pandemonium of men shouting and elephants trumpeting, grumbling and gurgling, thumping on the ground, and occasionally, when directly charged, turning tail and bolting in terror.

It is necessary to emphasise that a tiger is not normally a dangerous animal, and does not attack an elephant or a man, but once he feels cornered, he becomes a fighting mass of diabolical fury, utterly fearless of man or elephant, whom he attacks in hs mad rage without a moment's hesitation. He has been known to climb a tree and hurl a (lady) shikari out a high machan; he has been known to leap a height of 15 or 16 feet into a tall howdah and more often than not a tiger will try to break through a ring by charging home on an elephant unless he is killed or crippled first by a well-directed shot.

It must also be realised that the Nepal Terai jungles, with a fertile soil and rainfall of 100 inches, are either gigantic grass growth, frequently the height of a howdah, or are a dense forest of trees, matted together with great climbers, and a thick undergrowth of shrubs and shade-bearing plants, in which, if an elephant bolts, it is almost inevitable that howdah and rider and mahout and everything on the elephant's back will be swept with a crash to the ground by a thick branch or the loop of a tough climber. In either case it is extremely difficult to see a tiger at all until the area has been well trampled, by which time, naturally, the tiger or tigers are desperate and in a highly dengerous condition. " It is no sport for bad shots, hasty excitable people, or those with no stomach for danger. Even the most blasé hunter is likely to experience for a second or two a sudden spasm of fear when he first hears the blood-curdling roar of an infuriated tiger, and sees the great striped body launched on its charge, a thunder-bolt of death and anger in mid-air. It is one of the most terrific sights in the world." (From Wentworth Day's " King George V as a Sportsman.")

Imagine what it must be like when, as frequently happens in the rings in Nepal, not one but four or five and, once or twice, six tigers have been trapped simultaneously in one ring. The danger and heart-bursting excitement may continue for hours, until a succession of well-placed shots finally brings the thrill and nerve-tension to an end.

(2) *Catching wild elephants alive.* This elephant hunting is probably the most exciting sport in the world! When a herd or, say, a single elephant is located, the swiftest and best elephants set off in pursuit. They are stripped of all pads or howdahs, but the mahout crouches low on the neck band, and a *pachwa* stands on a rope loop behind the tail, also crouching low, and armed with a wooden handle or club studded with blunt nails.

The wild elephant dashes on, and the elephant pack go hell-for-leather after him, crashing madly through the jungle, lashed with

branches, the smaller trees falling like ninepins in front of them, creepers and grasses swishing over the backs and sides, and goaded on by the clubs of the yelling *pachwas* to exert their utmost speed. Elephants can develop a wonderful turn of speed for a short burst, but cannot keep it for long. So after a mile or so the wild tusker turns and shows fight. The domestic females are stopped, and the big fighting elephants go forward to titantic battle. One is filled with admiration at the pluck of the mahouts, as they urge their tuskers to in-fighting with the wild one! One tusker attacks head on, with tusks interlocked and writhing trunks, making what is called *chaudant* (the four-tusks fight), while others push and pommel at the sides. The wild elephant after a time gives up the unequal struggle and turns tail in flight. Again the wild pursuit is taken up, without giving the wild elephant any possibility of rest and recovery. Again he is brought to book, and so the fight and the pursuit continue he is utterly exhausted. Sometimes the fight and pursuit continue for two or even more days. Finally the tame tuskers close in on him for the last time, nooses of strong rope are slipped round his legs and neck, and he is led off into capacity and tied to a tree or strong post. For a week or so he is not allowed to get any sleep, while relays of trained men sing songs and teach him to obey words of command. This may be considered cruel, but a certain amount of cruelty is inevitable in catching and training wild elephants; it is kept to a minimum, and thereafer in the service of man he is well treated, well fed, with three attendants to look after him until the end of his life.

(3) *Rhinoceros*. I have never had the opportunity to shoot a rhino but I have had endless opportunities to see and study them at close range—sometimes at much too close range to be comfortable!

Rhinos in Nepal are now confined to the famous Chitawan area in the Rapti valley and near the Gandak river. In this rhino preserve *chaukis* or posts are stationed at various points ; these *chaukis* are under the forest inspectorate, and five to seven guards are stationed at each. In all there are over 100 guards in Chitawan, whose main duty is to protect the rhinos from poachers, and to find out where the rhino feed and wallow and lie up. The fact that the rhino horn has a very high commercial value in India—a good horn is worth over £100—makes it a very valuable prize for the professional poacher, and the species was nearly exterminated in Assam by poachers until adequate steps were taken for its protection. (Rhino horn is supposed to be a strong aphrodisiac, hence its fantastic valuation.)

In Nepal, however, the rhino has been more carefully preserved and there are probably more specimens of the Indian rhinoceros in the Chitawan preserve than in all India put together. It is estimated that at present the total number is between 300 and 400. Camping in this locality in the early cold weather, when the rice fields are ripening, is an unforgettable experience. At nightfall the wooly evening mist forms, enveloping the little en-

campment in silence and darkness. Sometime afterwards one often hears the footsteps and breathing of a rhino moving calmly from the riverain savannah towards the rice fields for his nightly meal. He pauses, curious but suspicious, to inspect the tent into which he has nearly blundered, and then moves on. Half an hour later a burst of yelling and a clatter of tins reveal the watchful Tharus protecting their fields from the marauder, to be repeated at intervals as the night advances. In the early morning the calling of rhinos to one another in the savannah forest behind mingles with the ringing alarm call of a chital at the glimpse of a hunting tiger, and the piercing calls of swarms of peafowl, sailing down from their roosting places for their daily feed in the rice fields.

Then the morning sun dissipates the mist, and from one's bed an amazing panoroma becomes visible. The flat plain of rice fields, dotted here and there with a mango grove and a cluster of Tharu huts, spreads for several miles northwards to the forest-clad hills and the dark backing of Mahabharat beyond. Behind Mahabharat again, floating in the sky, ethereal, glowing like pink pearls in the early morning sun, tower at close range the great giants of Himalaya (Himal-chuli, Manaslu, Annanpurna, Dhaulagiri, all about 26,000 feet), the eternal snows " changeless since the world's beginning, but changing to every mood of sun and cloud." There is no such view to equal this in all the Himalaya, and so in all the world.

On innumerable occasions my wife and I, sleeping in a little tent, have heard the heavy tread of one or two rhino gradually approaching, and have wondered anxiously what we should do if in the dark they should blunder into the tent or tent ropes. Once in the middle of the day we saw a large bull rhino come down to the river bank where we were camped, and swim across the 250 yards of flowing water to land on our shore within a cricket pitch of where we sat; a wonderful and beautful sight.

On another occasion when I was out shooting partridge with a shot gun, two great rhino came blundering in my direction, and when only a few yards away I hastily scrambled up a convenient tree to avoid them. An hour later, when riding back to camp on a young tusker elephant, the big bull rhino suddenly charged us out of a patch of thick grass, rushing like a runaway tank straight for the elephant. Luckily the elephant stood staunch, head on to the rhino, who at the last fraction of a moment turned aside and dashed past into the forest. A forest officer has plenty of thrills in the forests of Nepal!

But the forest officer, touring through thousands of square miles of forests, seldom has the opportunity of shooting tigers in a "Ring," or seeing wild elephants caught alive, but takes his sport as it comes on a more humble scale. We had 3 or 4 elephants at our disposal, equally useful for tranport, inspection, or as moving platforms for

shooting. Three or four times a week during the touring season we moved camp 10 or 12 miles, our tents and belongings piled into a dozen carts, and we, and as many of our staff as could find room, piled on to the elephants. Roaming through the gloaming of the dark forests, we were liable to meet at any time anything from wild elephants to junglecock and so carried both rifles and guns with us. Sometimes we saw nothing to shoot at, which did not worry us, as we always had the thrill of exploring country that no European had ever seen. Then the luck would change, and we might end the march with a leopard or a deer loaded on to one of the elephants, or some duck, swamp partridge or snipe picked up round some jungle marsh. In the evening, with camp pitched, and the flames of a roaring fire flickering on the surrounding trees, we would often hear the alarm calls of monkey or deer who had spotted a tiger or leopard slinking through the undergrowth nearby.

Once or twice a month we would have the good luck to find a natural " kill " of one of the carnivores, and our orderlies would build a " machan " or platform in some convenient tree, on which my wife would sit patiently and silently, to see and perhaps shoot the animal coming for its evening meal. Incidents such as these are much more typical of the sport enjoyed by a forest officer in the Nepal foothills than the great Ring shooots of the Maharaja or the rare kheddah operations for catching wild elephants.

(4) *Fishing.* Fifty years ago I started fishing, and ever since I have lost no opportunity to indulge in this most fascinating sport. I have fished for salmon and sea trout in Kerry and Devon; for brown trout in Killarney, Switzerland. Germany, Kashmir, and elsewhere; I have had sea-fishing off many coasts, but to my mind there is nothing to equal the mahseer fishing in the Himalayan foothills.

Here the great Himalayan rivers break through the last rampart of mountains before spreading out into the flat plains of Northern India. Let me try and describe one of these, the Sarda river, which forms the boundary between Nepal and India. It is a gigantic river, with a minimum flow of 7,000 cu-secs, and a flow in the monsoon floods of up to 700,000 cu-secs. I do not know how many times this is greater than the Shannon, or any other river in Eire. About fifteen miles from the foothils a great dam has been built across it, to divert some of its water into an immense canal which irrigates and serves several million acres of cultivation in the thirsty districts of the Plains.

This dam and barrage is of great interest to the fisherman. It is fitted with a fish ladder to assist the migration of fish. At certain periods of the year (March and April) milloins and millions of small fish (called *chilwa*) have the urge to migrate *en masse* up the river. Ths fish-ladder is the first of many obstacles they have to overcome. They struggle up in scores and hundreds, and at the top great numbers of large mahseer are waiting for them and gobble them up as fast as they can. It is quite a sight to see!

But the dam has another effect on the fish life of the river. For a fortnight every year the sluice-gates are opened wide and the great canal is closed and run dry for repairs and cleaning the bed. Thousands of fish of all sorts, large and small, are thus trapped, and left to flap about in shallow pools. The news gets around by village telegraphy (which is older and quicker than wireless), and whole villages of aboriginal Tharus and other cultivators turn up and indulge in their annual orgy of catching and eating the helpless fish.

Above the dam the river winds its way between islands covered with quick-growing trees and grasses, the home of countless deer and tiger and occasional wild elephants. A few years ago a battle to the death was actually witnessed here between a big male elephant and two infuriated tigers whose cub had been hurt by the elephant. The fight went on for several hours before the tigers finally succeeded in killing the wild tusker, after first blinding it with their claws.

As the river approaches the foothills, boulder beds and foaming rapids become more frequent, a stretch of 6 or 8 miles of splendid fishing water . Just where the foothills are met, there is a small hamlet called Barmdeo, where there is a boom across the river to catch the tens of thousands of pine sleepers that have been floated 50 or 60 or 100 miles down the river from the great pine forests of Kumaon and Nepal. The Barmdeo pool is 500 or 600 yards long, 100 yards wide and 20 feet deep, in which hundreds of splendid mahseer live, and also goonch (freshwater sharks which run from 20 to 200 lbs. in weight).

At the top of this pool is a most terrific rapid, where the whole flow of this great river rages down a steep incline in a channel only about 30 yards wide and for 150 yards or more there is only this boiling white broken water from bank to bank. It is here that the big fish go to feed, and it is this characteristic of the mahseer that makes mahseer fishing such grand sport. In my experience, a salmon is usually hooked in a pool, and a salmon that takes out more than 50 yards of line in its first rush is quite exceptional. A big mahseer, on the other hand, is usually hooked in a raging current, and in his first frenzied dash 150 or 200 yards of line screeches off your reel before you can move a step. And if you want your finger neatly cut off, just put it against your line for two seconds.

I have mentioned the annual migration of *chilwa* in March and April. When a run of *chilwa* is on, you see a continuous stream of these little fish going up the edges of the pool placidly and undisturbed. But when they come to the boiling rapids, they are checked, thrown into confusion and bunched in thousands, fighting their way as best they can against the cruel current. This is what the big fellows have been waiting for, every fish in the pool goes to the rapid and there takes a terrible toll of the poor little *chilwa*. It has been said that a fisherman lives on hope, but when he strikes a run

of *chilwa* in a Himalayan river, he has no further use for hope, as he KNOWS that within 3 or 4 casts he will be into a big fish. Can a fisherman ask for more?

About 10 years ago, in the last week of March, my wife and I made a trip to Barmdeo, partly to inspect the boom and the sleepers, partly to fish. There was a boat and two boatmen on the pool, used for repairing the boom, and two more men for catching the odd sleepers with " sarnais." Let me explain a " sarnai." An inflated bullock skin, with the neck and four legs sticking up in the air, floats on its back in the water, and a man lies on it, with his legs paddling on one side, and his arms working a small wooden paddle on the other. It looked very easy, but when I first tried to work one, it promptly rolled over on its side and deposited me head first into the water! But the expert sarnai-man worked these unstable bloated skins with wonderful skill. Indeed, when occasion arose, I sat on the back of the man, holding on to one of the legs, and was paddled about the pool with safety if not comfort.

Our fishing tackle included one large strong spinning rod with a silex spinning reel and 250 yards of strong line. Also a 9' split cane fly rod and 50 yards of line for small fish of 2 or 3 lbs. When we arrived at Barmdeo we were greeted with a very welcome sight, the terns were diving and screaming over the rapids, a certain sign that *chilwa* were running. It was a brilliant hot sunny day—ideal conditions for mahseer fishing—and we hastily got out our rods and tackle, and crossed to the further bank in the boat. Thus started one of the red-letter days of our fishing career.

I fixed up the spinning rod with a plug bait, that fascinating and deadly lure that floats in slack water and wiggles temptingly in a swift one. I said to my wife: " I'll just show you how to do it. You throw far out across the current, then let the bait swing round, and reel up slowly—like that," and, as I spoke, there was a jerk and the reel was screaming out. I should have explained that at this place the current of the great river swept down into the pool and came up against a cliff on our bank, where it divided, some of the water swirling round into a backwater making a whirlpool 40 or 50 yards in diameter, and the bulk of the current sweeping on far into the pool. If a fish could be guided into the backwater, it was fairly safe, if not, the chances of a catastrophe were serious. Well, my fish behaved respectably and came into the backwater, and was duly landed in under 15 minutes, a lively 13 pounder.

Then my wife took the rod, and about her third cast the reel was again singing its glorious song, and after a 20-minute struggle she safely landed a 15-pounder. I then went off in the boat to inspect the timber depot, and left her to fish. At the next attempt she hooked and landed successfully another fine fish of about the same size. After a rest she tried again and was soon into a monster, who dashed down to the cliff, hesitated, and then—oh, horror!—tore on down the river; 100 yards of line was out, then 150—200—

250 yards and all the line and all the backing was out, down to the last bare inch round the drum, when the fish stopped.

Here was a pretty fix. No tackle ever made would pull a big fish up against the tremendous current, and the big backwater cut off any chance of going down the bank after it. The two sarnai-men were with her, and suggested she should sit on the back of one of them, while the other held on to increase stability, and they would thus take her down the river after the fish. It demanded some nerve to go down that roaring river on flimsy and unstable sarnais, but as there was nothing else to do, she managed to scramble on, sitting on the man's back and holding grimly to the rod. They paddled slowly down the backwater, at the end of which she had recovered a precious 50 yards of line. On they went, creeping along the shore out of the main current, my wife reeling up as fast as they floated down. When she reached the point where the big fish was sulking in the pool, all but 50 yards was back on the reel. Then the sarnai-men paddled bravely out into the main current to cross to the other side, and were, of course, rapidly washed down. At this moment, the fish decided to make another dash for liberty, and tore *up-stream,* with the result that the line raced off faster than ever, until again over 200 yards were out. So now the sarnai-men paddled up-stream in the slack water on the further shore, while my wife reeled in for dear life. And so the fight went on.

Meanwhile I had heard the news and came hurrying back to help, and was just in time to see the end and to help to land a magnificent fish of 27 lbs. My wife was almost as exhausted as the fish, dripping with perspiration, purple in the face, and scarcely able to stand. The temperature was 90 degrees in the *shade,* and she had been for two hours or more in the *blazing sun,* under tremendous strain and exertion while landing the three big fish. Reader, have you ever experienced the sensation, when big fish are rising madly, of being physically unable to fish any more ? My wife has!

While my wife laid down under a shady tree nearby I took the small rod and a fly spoon and the two sarnai-men, to try my luck with smaller fish. As I could not reach the edge of the strong current from the shore, I copied my wife's example and sat on the back of one of the sarnai-men, who paddled out to the edge of the current. Here I had grand sport, and during the next 90 minutes landed eight fish varying from 2 to 7 lbs., with one big one (for a fly rod and 50 yards of line!) of 11 lbs., which towed me a long way down stream before I managed to land it.

Then the *chilwa* run ceased, the terns settled on the shores to digest their big meal, the mahseer left the rapid water, and the day's fishing was over. We retired to our camp nearby with about a hundredweight of fish! It was a day of glorious sport we shall never forget.

FORESTRY AND LAND USE SURVEY

By T. W. FREEMAN

IRELAND'S 2% of forest land is a smaller proportion of total area than in any European country except Iceland: the once abundant woods were removed by slow attrition for burning and industrial use. In the middle of the nineteenth century various writers expected to see a vast extension of the farmed area of Ireland and tree planting was regarded as desirable but entirely subsidiary to the extension of agricultural land. There had been some demesne planting and it was there that most of the woods were to be found, though some native woods survived, chiefly in upland areas and on valley sides. Already, however, many of the demesnes were beginning to decay and few of the holders were inclined or able to plant large areas with trees. Agricultural land was reclaimed to some extent, but never to the extent forecast by the optimistic: it was in 1871 [1] (and not, as is commonly said, immediately after the Famine) that the area recorded as 'under crops and pasture' was greatest. Since then, comparatively little land has been added to the farmed area, and there has been a marked decrease in certain countries for example (see table on page 29), Donegal 36%, Kerry 31%, Wicklow 29%, Galway 24%, Mayo 20%, Clare 13% and Cork 10%. All these are counties with a considerable area of uplands: the area of each county now under crops and pasture is indicated in the table. It will be seen on examination that the more purely lowland counties show little change in the proportion of 'improved land.'

Here it is possible to see some selection in land use: the poorer and more remote areas have been abandoned, and the better placed and more intrinsically fertile retained as agricultural land. The forester has an obvious interest in the areas not used as farms; his main sources of land are heaths, derelict farmsteads and also old demesnes. In the east, he may expect to spread forest through parts of the 'hill-pasture belt', for example in the Wicklow mountains from *c.* 600-1,200 ft. (or even higher in certain places); in the southern ranges there is a similar belt, but in the west the tree limit becomes progressively lower towards the coast. Three questions are crucial: first, whether the forester has a claim to more of the unused demesne lands; second, how far the grazing rights of a few farmers should weigh against the chances of acquiring large areas of hillside, especially in such semi-derelict valleys as Glencree; third, whether in the scientific interests of posterity some natural and semi-natural woodlands should be preserved from incorporation in any plantation scheme. Even if such woods are immediately beside a plantation, there will probably be an infiltration of subspontaneous conifers among the native deciduous trees.

Two essential questions for the forester are first, how much land is available and second, where is it? In Great Britain and Northern Ireland, these questions have been answered by the work

of the Land Utilisation Survey, which has mapped field by field, acre by acre, the entire land area.[2] This has been done on the scale of 6″ to 1 mile by voluntary workers, and the information so acquired has been published for each county in Britain, and finally collated in a survey of British Agriculture by the Director, Dr. L. Dudley Stamp. In addition, the first of a series of reports on Northern Ireland has recently appeared. At first the survey was an entirely voluntary effort, unsubsidised except from private sources, but after many years the Ministry of Town and Country Planning was established and seized eagerly on the work of the Survey. The voluntary lamb has acquired certain attributes of a government lion. From the beginning, the Survey divided land into six categories: arable (actually cropped), A; permanent grass, M; rough pasture, H; gardens, G; buildings, W; forests and woods, F. There are many subsidiary classifications of each of the six main groups, which form the basic minimum of classification and a minimum for mapping that any qualified map reader can accomplish: those unable to read a 6″ map may stay at home.

For the forester, the merit of the Land Utilisation Survey treatment lies in the demonstration of the actual use of the land: on its maps, it is possible to see exactly where the rough pasture and the existing woodland is located. A recent statement by a cabinet minister to the effect that the Forestry Division should look for an enclave of some 50 square miles for its planting, is exactly the type of statement that can be conveniently tested by such a survey. With such mapped information, demonstration to the townsmen of possible area for forestry is easy: for example, everyone knew that large areas of the Highlands of Scotland are entirely without inhabitants, and used only for deer parks. It is much more difficult to explain to the townsman that many of the uninhabited areas are not suitable for forestry, for a variety of reasons. Of these, the most crucial are unsuitability of soil and climatic exposure; and another is the use of land as rough grazing by people who could not, or who claim that they could not, live without it. This implies that the right of a comparatively small number of farmers, in some remote valley, must be considered to be of importance, even though their removal might release several hundreds, even thousands of acres. On the other hand, every new reservoir has submerged farms, houses, roads, churches, in the provision of an essential public service, and therefore it could be argued that the re-settlement of a few farmers was reasonable and even desirable in the general social interest.

Factors of climate and soil are clearly among the first to be considered, and so obvious that every forester knows their relevance. The general public, however, does not, and thinks merely of large areas lying waste. Along the Atlantic fringe of Europe, in Ireland, Scotland and Norway, the natural growth of trees is hampered by the constant blowing of westerly winds: in exposed coastal situations of Clare, no trees will grow

but, as Tansley shows,[3] even a moderate degree of shelter will enable shrubs to develop within a short distance from the coast; and in the valleys farther inland woods are well developed. A similar transition is observed on the coasts of Kerry; the western coasts of Valentia island are treeless, but on the sheltered eastern shores the demesne has excellent woods. In short, the tree limit ascends from sea level to some hundreds of feet within a few miles of the Atlantic, given conditions of shelter; but adequate drainage is necessary also as over much of the western seaboard the natural vegetation is bog. The map of the uninhabited areas of Ireland shows the restriction of settlement to patches in certain valleys and along the coast: to a great extent the limit of settlement is the limit of human endurance. Having rain on an average of two out of every three days, occupying an environment that consists largely of bog growth on soilless rock, having natural drainage so bad as to be beyond the range of redemption, possessing large mountainous heathlands which in many cases are bare rock and in many more very poor, the western uninhabited areas do not offer a favourable environment for forest development. Even the far-famed woods of Killarney, under conditions of remarkably mild winters and heavy rain, show a prodigality of growth that includes mosses, ferns, ivy and herbaceous plants, all of which combine to attack the trees: in this case the difficulty of the forester lies partly in the lack of any marked seasonal check to growth, such as that experienced even in the east of Ireland, and still more in the coniferous forests of Europe.

The centre and east of Ireland, however, offers a far more favourable environment for the growth of trees than the west. It is not easy to estimate the upper limit of tree growth in the uplands as most of the cultivable land has been used at some time during the past hundred years, and even the areas or rough grazing are used by sheep in an all-too-enthusiastic search for sustenance. Some of the periodic heather burnings have been disastrous, as they have exposed soil on steep slopes which is washed away by rain: this is a phenomenon of soil erosion, which is by no means unknown in Ireland. It is perhaps a reasonable assumption that the tree limit lies between 1,000 ft. and 1,500 ft. in the sheltered valleys of the Wicklow mountains: in 1904, Pethybridge and Praeger,[4] in a survey of the northern part of the mountains, drew particular attention to the 'hill-pasture zone' as a kind of intermediate or transitional belt between the continuous farmlands of the lowlands or valleys, and the upland moors. In the Wicklow mountains, there is the largest continuous upland area of Ireland for the 1,000 ft. contour encloses an area of 205 square miles. To this day, there are several farms at 1,100 ft. in these mountains, and a few at considerably higher altitudes, but the limit of occupation, so curiously varied, is perhaps best interpreted as the expression of individual choice; some farmers have remained on their holdings but others have not. Work similar to that of Pethybridge and

Praeger has not been done elsewhere in Ireland, but there is every reason to believe that conditions in other upland areas are similar. The long line of hills extending from the Slieve Bloom to the Slievefelim, the Comeraghs, Slievenaman, the Knockmealdowns, the Galtees, all appear to possess a similar hill pasture belt, with a varied limit of cultivation: on the east side of the Comeraghs, near the famous Coomshingaun corrie, the highest farms are at 500-600 ft. but even on the dreary Castlecomer plateau there are farms at an altitude of more than 1,000 ft. The general, but not universal tendency has been for the limit of cultivation to recede downhill.

A further point emerges here. In many valleys, the extent of agricultural settlement varies markedly from one side to the other; normally the limit is higher on the south-facing side or the side that has the drier and warmer soils due to a greater incidence of sunshine. This feature of mountain valleys is well-known, especially in the Swiss valleys which exhibit the contrast between sunny and shaded slopes remarkably clearly, but similar phenomena exist, even if in a lesser degree, in all mountain valleys. The woods of Swiss valleys are mainly on the less favoured slopes, the farmland in areas of sunnier aspect. Not far from Dublin, in the Glencree valley, a similar contrast may be observed: it is on the less favoured and northward-facing slopes that the plantations exist. A similar contrast may be seen in the Glendalough area and also in the valley near Drumgoff (Glenmalure), where the plantations are also on the north-facing slopes. Not always is such a contrast found; in the main Glenmalure valley, there are plantations on the south-facing side, but on land that can never have been profitable for agriculture.

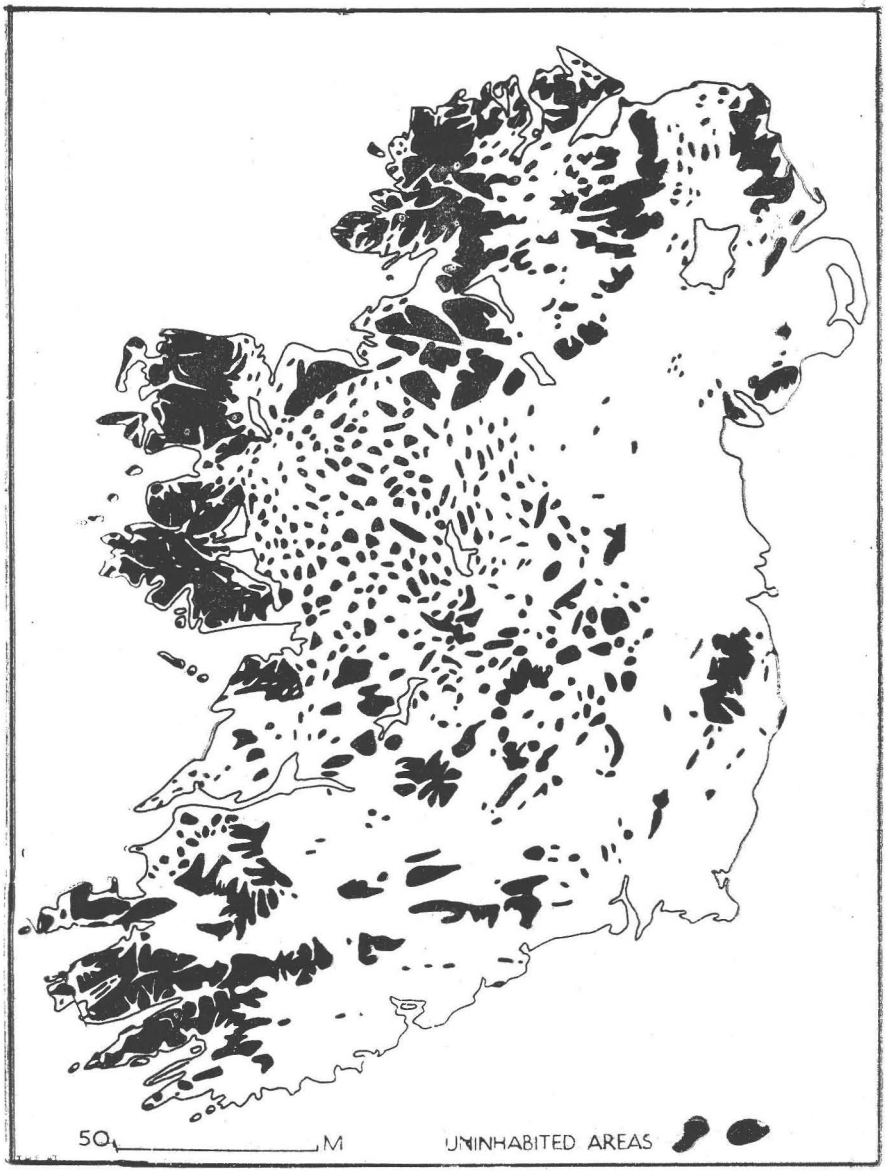
Consideration of factors of soil and climate leads to the conclusion that many areas have definitely restricted possibilities for the forester; already it is clear that the central and eastern uplands of Ireland are more suitable for development than the more remote but less inhabited mountain areas of the western seaboard. But, after viewing such decayed valleys as Glencree, and knowing from enquiries that many farmsteads are occupied by ' wornout ' families, should one wish to replace it by something approximating to the trim forests of Bavaria? Land degeneration is a process of attrition: slowly, but none the less surely, bracken, gorse and heather invade pastures which become rough grazing within a few years. The advance of such enemies is so easy to allow, their defeat so difficult to attain. Any scheme of evacuation will raise the difficulty of finding suitable land for the evacuees; already many thousands of farmers in Ireland have too little land, and all the demesnes in the country are insufficient for the resettlement of those for whom they are intended, the needy farmers from ' uneconomic holdings ', especially those of the west. To some, a few farmers will appear as stupid people standing in the way of a national advance, to others as men who, however inadequately they farm,

are yet possessed of land by an inalienable right that must be respected.

Demesne lands are in a different category, and it was to them that the Congested Districts Board looked from 1891 onwards as the 'untenanted' acres on which the poorest farmers of the land could be settled.[5] Within a short time, however, it was discovered that these lands were not as extensive as was at first supposed. Some of them are, in part at least, well-cultivated farms and not a few have remarkable plantations that have been carefully preserved. There are, nevertheless, still some semi-derelict demesnes in Ireland farmed far below their capacity, and possessing sadly-neglected woods; with certain significant and even laudable exceptions, the demesnes have been decaying from the early nineteenth century to the present day. It is to some of these that the forester may look for extra land though even here he has the competition of the agricultural occupier. In one case, recently studied, at Mitchelstown, Co. Cork,[6] two-thirds of the demesne of 1,300 acres is now divided between fourteen farmers, the creamery and one other holder: nothing remains for forest.

The essential point of this paper is that only a detailed study of land use can provide the data essential to the forester. Those who wish to speak of the possibilities of afforestation should be men who have spent days and weeks trudging through the saturated and unpromising areas that look so attractive as 'uninhabited areas' on the map, for forestry is a field science, a study of the land, the good (or indifferent) earth. In such a study, there is no place for the townsman-theorist. Not only is the survey one of actual country, but it is also one of local climate and soil: it is not necessary to explain to foresters that different trees have their varied qualities of adaptation to particular types of habitat, but it is important to stress that during the past eighty years farmers have abandoned large areas of submarginal land without necessarily yielding their grazing rights over such lands. All the optimism of Sir Robert Kane in 1844, of the Devon Commission of 1845 and of many more writers who hoped to see a vast extension of the farmed area by bog and hillside reclamation, has not been justified by experience. Those who say that people should re-occupy the abandoned areas would be well advised to study them in the field, and to ask themselves whether, in this age, it is likely that people will be found to till a few poor acres in remote valleys or on mountain sides. Will anyone desire the high-lying farms of Wicklow once the present holders have gone? Concentration on the better lands, intensification of farming methods, even the production of more food, can all exist even though less land is farmed. The 'other land' will have various uses, but one of them is forestry, provided that the forester is, like the farmer, given land that offers a reasonable chance of successful working.

	Increase or decrease of 'improved land' in Irish counties, 1871-1944, per cent. (1871 figure, 100%)	% of each county which was improved land' in 1944
LEINSTER		
CARLOW	−5	84
DUBLIN	−5	80
KILDARE	−7	82
KILKENNY ...	−4	88
LEIX	−9	74
LONGFORD ...	+4	83
LOUTH	+1	87
MEATH	+1	94
OFFALY	−3	70
WESTMEATH ...	−1	84
WEXFORD ...	−1	88
WICKLOW ...	−29	52
Whole Province ...	−5	80
MUNSTER		
CLARE	−13	70
CORK	−11	72
KERRY	−31	47
LIMERICK ...	−0	90
TIPPERARY ...	−2	81
WATERFORD ...	−10	67
Whole Province ...	−11	70
CONNACHT		
GALWAY	−24	53
LEITRIM	−10	71
MAYO	−20	43
ROSCOMMON ...	+2	80
SLIGO	−8	66
Whole Province ...	−15	57
ULSTER		
CAVAN	−1	86
DONEGAL	−36	35
MONAGHAN ...	+1	89
Three Counties ...	−17	56
EIRE	−11	62



THE UNINHABITED AREAS OF IRELAND

This map shows, with some necessary generalization, the areas with no inhabitants. The mountains above the limit of settlement are prominent: on the lowlands, there are numerous bogs and some of the bare limestone Karsts near Galway bay. It cannot be too strongly stressed that only part of the areas shown will prove suitable for forest development.

From 'Ireland, its physical, historical, social and economic geography,' 1949; map reproduced by kind permission of Methuen and Co.

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THE ASSOCIATION OF IRISH FOREST NURSERYMEN

was formed at the request of the Minister for Lands in 1948. It exists to co-ordinate the efforts of the commercial growers who play such an important part in the work of re-afforestation. It is the vital link between the Plan and the Forest.

18 SUFFOLK STREET - DUBLIN

OBITUARY

ARTHUR CHARLES FORBES *

ON November 7th, in his 85th year, there went from among us a quiet, unassuming figure, who will long be remembered with affection and esteem by those who have the cause of Irish forestry at heart.

Arthur Charles Forbes came to this country on September 1st, 1906, bringing with him a wealth of forestry knowledge and experience possessed by comparatively few of his contemporaries. He had been forester in charge of the Longleat Estate of the Marquess of Bath, and later became Lecturer in Forestry in Armstrong College of Science, Newcastle-upon-Tyne.

The Department of Agriculture and Technical Instruction, as it then was, had awakened to the fact that there had been a great deal of discussion about the necessity for planting trees in Ireland. An embryo Forestry Service was created, as a gesture, and it was looked upon as one of those things which could be forgotten, except for once a year, when financial provision had to be made in the Budget to allow it to carry on. Nothing of a nation-wide scale was contemplated, and forestry was merely to be of back-garden significance.

Fortunately for Ireland, it completely underestimated the calibre of the man it had appointed. Forbes had shown, in his written works, that he was well acquainted with the past history of forestry in this group of islands, and thoroughly convinced as to its importance in the economic life of the country. He was not one of those men content to remain in a groove, and just to carry on as required until superannuation overtook him. He brought to his task a mind which refused to be circumscribed by short-term views, nor was it tolerant of temporary expedients. It was not long before he began to make his views known in no uncertain fashion.

Though small of stature and delicately made, he had a spirit which could not be contained within mere physical limitations. He was much too forthright to be able to suffer fools gladly; not for him the tortuous paths of circumlocution, and his very directness was on occasion a source of annoyance and embarrassment to his superiors. Day in and day out, he continued to argue the case for forestry, but it was not until the outbreak of the first World War, with its attendant restriction of timber imports focussing attention upon the woods and plantations throughout the country, that the cogency of what he had continually declaimed began to be recognised. From that time onwards, so far as this island was concerned, Forbes and forestry became synonymous terms.

As Timber Controller during the war years, he was always guided by the long view, and had it not been for the restraint he exercised at that time, this country would not have had the growing timber stocks which stood it in such good stead during the second World War.

The lessons of the war years were not lost upon Whitehall, and, in 1916, the Acland Committee was set up to go into the whole

question of creating forests as a reserve and protection against future emergencies. As a result of the labours and recommendations of this committee, the Forestry Commissioners were set up, and Forbes was appointed Assistant Commissioner for Ireland in November, 1919.

His new appointment came at a very unhappy time. The country was in rebellion against an occupying Power, and, even after the Treaty of 1922, when the Irish people had their own Government and he was styled Director of Forestry, the country was still to be racked by civil war. Progress during those years was virtually nil, as forestry is an occupation very sensitive to disturbed political conditions, and a tranquil countryside is essential if it is to continue.

He must have inherited the dour persistence of his remote Scottish ancestors, to have been able to carry on in face of such difficulties. Nevertheless, the work went on, and when he retired on June 1st, 1931, instead of the few hundred acres he was called upon to manage in 1906, there were 36 forest centres in active being, and new plantations established amounted to 26,900 acres.

Retirement did not mean an end of active life for him. His advice was continually sought by estate owners in Ireland and elsewhere, who possessed woods and plantations. The outbreak of the second World War meant that his services were in greater demand than ever, and it has to be recorded that he was still carrying out inspections and valuations of standing timber in his 80th year. Evidently the statement in the 90th Psalm, that the strength of the octogenarian " is but labour and sorrow," did not apply to him.

It would neither be desirable nor possible in the course of a short appreciation to give details of all that he did, but one highlight in his career was the establishment of sample plots at Avondale in 1906-'07. This estate had a considerable area of open grass land, which he at once fenced in and established 104 sample plots, of both native and exotic trees, so that their growth under Irish conditions could be studied by future foresters. He explained that he did so before the agricultural fanatics could get their hands on it. Not all of the plots were successful, but mention must be made of one growing Abies Grandis, which has shown an annual production of timber unequalled anywhere else in Europe. His faith had been justified by results.

No forester requires a storied urn or broken column to be erected in his memory. There could be no fitter memorial than living trees. In those splendid forests of Avondale, Rathrdum, Aughrim and Mountrath, to mention but a few, there are living testimonies to his memory, which will still be standing long after many of us have been gathered to our fathers.

Let those woods be his epitaph; he would have wished nothing better.

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F.A.O. MISSION TO AUSTRIA

In view of the recent F.A.O. Mission to Ireland by Mr. D. Roy Cameron, the following account from *Unosylva* of a somewhat similar mission to Austria may interest readers.

" A co-ordinated programme for the development of Austria's most important economic asset—its forests—is suggested in a report of the F.A.O. Forestry Mission to Austria. The mission was carried out by Dr. Egon Glesinger and Mr. D. Roy Cameron of F.A.O. and the report was delivered to the Austrian Government in April.

" An investment programme for forestry projects to be undertaken between now and 1952 at a cost of 1,700 million Austrian schillings (about 80 million United States dollars) is recommended. Suggested expenditures would cover forest management and development; modernization of primary forest industries such as the manufacture of pulp; and improvement of secondary industries such as paper-making, furniture manufacture, and box-making.

" In addition to the investment programme, the mission formulated major recommendations for the reorganization of forestry administration and services.

" The recommended investment programme, if carried out in full, could be expected to increase annual production value by 30 per cent. in 1952. This would allow for a 60 per cent. increase in exports of forest products, thus adding about 600 million schillings a year to the country's receipts from foreign trade. Since Austria's forests contribute regularly one-third of the country's export value, this would go a long way towards closing the existing gap in her balance of payments.

" In accepting the report, Chancellor Figl expressed gratitude to F.A.O., and promised immediate implementation."

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REVIEWS

The Coming of Age of Wood. Egon Glesinger. Simm and Schuster, New York, 1949. $3.50. 280 pp.

This is a most stimulating and arresting study of the role which wood can play in transforming a world of shortages into a world of plenty. Its author can fairly claim to be an authority on his subject. Coming from a family which has been in the lumber business for four generations in Czechoslovakia, he chose European Wood Problems as the subject for his Doctor's thesis. In 1933 he was chosen as Secretary-General of C.I.B., the international timber committee sponsored by the League of Nations. After 1941 he spent several years in the U.S.A. before his appointment as Chief of the Forest Products branch of F.A.O.

The central thesis put forward in this book may be briefly stated: Wood is the one and only universal, potentially abundant and inexhaustible raw material which can satisfy almost every requirement of existence; by some extension of the existing forest area, by proper sustained yield management of all forests, by eliminating wasteful utilization and by integrating forest industries so that the mechanical and chemical characteristics of wood are utilized to the full, by these means can be made available to the human race a plentiful supply of wood and the derivatives of wood —pulp paper, motor fuel, wallboard, turpentine, plastics, textiles. He claims that the forest can provide one of the four freedoms—freedom from want—within a generation. The world's forests are capable of supplying 8,000 millions tons of materials, more than twice the tonnage of food, coal, oil, minerals and fibres now consumed yearly by mankind. This would allow four tons per head of wood. In the future he foresees wood, not just as firewood and lumber, but as the source of a vast range of materials created by the marvels of wood chemistry.

Already the problems of breaking down cellulose into sugar and wood alcohol and the synthesis from these of lubricating oils, rubber, plastics, paint, cattle food, etc., has been accomplished on a factory scale. During the war such developments with an economy based on wood have enabled Sweden to survive a state of critical siege. Even hamburgers and the Swedish drink "aquavit" have been produced.

The reader will no doubt suggest that while such products are worthwhile under war conditions they disappear rapidly under the stress of peacetime competition from cheaper rivals. The author frankly admits that some of these produts are no longer economic but argues strongly that with further industrial research many of these will be in a position to compete with, if not undersell, such products. The intense opposition of American oil interests to the development of the wood alcohol industry (which he describes in detail) certainly suggests that they take the new rival very seriously indeed. Again, if the problem of the industrial use of lignin

20-30% of all wood, which is now largely wasted or at best boiler fuel, could be solved, the costs of chemical wood products would be drastically reduced and the whole outlook dramatically altered.

While prophecy is necessarily a risky business, the author certainly gives the conventional outlook on utilization a severe jolt and one must concede it a reasonable prediction that we are on the threshold of an immense and revolutionary expansion in the chemical uses of wood.

After imbibing this forestry " cocktail " one proceeds to ponder on the possible reactions of such a revolution on the development of Irish forestry. Up to the present the factories utilizing wood as a chemical raw material have been immense undertakings involving heavy capital outlay and requiring correspondingly immense tracts of forest close by to render them economic. In our highly diversified country where forestry must fit into an agricultural pattern such immense blocks are an impossibility and we can only hope that the equipment for chemical use of wood will be adapted for use on a smaller scale—as the Danes have done already in the case of pulp and plywoods. On the other hand, the chemical development has its brighter facet for us. At least the first rotation of such species as P.C. on poor and exposed western peat lands are unlikely to produce much high-grade lumber and we will probably have to rely on such outlets as firewood, pulp, fibreboard and chemical utilization for a high proportion of the crop. Such a development would not be unwelcome as the ratio of industrial employment to forest acreage is extremely high in such industries. Thus the new forest could at an early stage contribute materially to the relief of congestion and under-employment which are the chronic ills of the West.

In addition to putting forward its main argument, this book provides a fund of interesting information on forest area and distribution, consumption, utilization, chemistry, plywood, veneers, fibreboards, etc. Perhaps the most startling fact of all is that about 80 per cent of all wood substance produced by the forest is wasted in utilization. Yet this 80 per cent is chemically identical with the 20 per cent that is used. The book is illustrated by a series of clever drawings which illustrate the main points of the text.

RHEOLA FOREST

Britain's Forests. Forestry Commission. Price 6d.

The British Forestry Commission evidently intends to keep the public interested in its work and informed of its achievements. This well-produced booklet, of seventeen pages, is the third publication in the series dealing with Britain's forests. In this instance the forest is that located at the Rheola estate near

Rosolven, in the heart of a coal-mining area some six miles from Swansea.

The subject has been dealt with on the broadest basis, with a resultant widening of interest. Geologically, the coal measures of the carboniferous series predominate, and it is interesting to note that the species most widely used are Japanese larch, Scots pine, Corsican pine and Norway spruce. Of these the Japanese larch has been the most successful. On high-lying and exposed areas sitka spruce is now being extensively planted after the ground has been ameliorated by deep ploughing. European larch and Douglas fir have fallen into disfavour because of their poor performance. It is stated, however, that the Douglas fir has made fair growth on the better quality and more sheltered ground.

In dealing with the climate of the area, it is pointed out that while proximity to the Atlantic leads to a mildness of climate, it also results in exposure to strong winds which are "one of the forester's major difficulties." The rainfall of the locality is 70" (approximately).

To interest the naturalist, notes on the plant and animal life of the forest are given. The topography is also described, and a brief account of the archæology and history of the district is given.

Centred on a coal-mining region, it is but natural to expect that one of the main reasons for the establishment of this forest was that it should supply the pits with timber which would otherwise have to be imported. Though now but twenty-seven years established, the forest is beginning to fulfil this object. The demands of the mines for timber can be assessed when it is known that for every 35 tons of coal raised in South Wales an average of one ton of timber is required.

Of the present total area of 13,660 acres, 6.776 acres carry crops ranging through a complete series of age classes—up to the maximum of twenty-seven years. Some of the first planted trees now measure 50 feet in height. This land which, prior to 1922, "sufficed to support but a handful of shepherds" now provides employment for five foresters, three foremen and one hundred and twenty-eight labourers.

This is a thoroughly useful and interesting booklet—especially so for the people of Wales who may find it possible to visit the forest. It is obvious that the Forestry Commission, though ever mindful of the fire hazard, desires that the public should visit its forests and learn to appreciate their natural grandeur and material worth.

ANNUAL EXCURSION TO WALES, 1949

Report by JOSEPH O'CARROLL, B.Agr.Sc.

By courtesy of the British Forestry Commission, the Societiey's nnual excursion took place to the forests of Beddgelert, Clocaenog and Gwydyr, in North Wales, on May 24th, 25th and 26th. The Forestry Commission officers who accompanied the party were : Mr. A. P. Long, Director for Wales; Mr. F. C. Best, Conservator for North Wales; Mr. W. P. Cadman, Divisional Officer; Mr. Hampson, District Officer, and Mr. Holmes, Research Officer. These gentlemen spared no pains in keeping our members informed of the salient features of the various stands and trial plots which the party visited.

First Day

Each member was provided with a booklet containing the timetable and itinerary for the three days, a map of the forests in the area and comprehensive notes of the stands, trial plots, etc., to be seen. Thus prepared, the party left Bettws-y-Coed and travelled through the beautiful Lledr Valley and the Vale of Ffestiniog, to Beddgelert Forest. Magnificent views of the mountains and valleys were observed on the journey and the Forestry Commissions treatment of this lovely area was discernible. Clumps of scrub oak had been left at intervals; the almost bare rocky knobs had been planted with Scots and Contorta pines, and groups of larch were placed on the better slopes. The changing shades of green produced a most pleasing effect.

On our arrival at the forest we saw two areas of Sitka Spruce, one of which had gone into check, while the other was growing vigorously. Mr. Hampson explained that the vigorous crop had been planted on land which had been ploughed, while the other—though two years older —was planted on turves. Our party was then joined by a number of overseas visitors, guests of the British Council. Mr. Long welcomed the combined group, saying how glad he was to see so many different countries represented—Ireland, Finland, France, Sweden and Brazil. Mr. Best told us that, at Beddgelert we would see the results of experiments carried out between the years 1926 and 1935, before the practice of ploughing had been generally adopted. Mr. Holmes explained that the experiments aimed at ascertaining how best to establish satisfactory plantations on this type of poor exposed mountain land They were also arranged so as to provide information as to the species best suited to the various sites, and as to the optimum drainage intensity and manurial treatment.

Mr. Evans, the Forester, led the way with a *toot* on his hunting horn,

At each of the plots Mr. Holmes explained the treatment given, the object of the experiment and the results obtained. By lunch time the party had seen a series of plots which had yielded the following information : That adequate drainage of peat is essential and that drains should not be more than 12 ft. apart; that mound planting is

better than pit planting; that Belgian turves are superior to shallow turves; that normal planting on these turves is better than deep planting; that 2 ozs. of basic slag placed in the notch at planting greatly assists the establishment; that Sitka Spruce is the most suitable species for peat with a Juncus, Molinia and fine grass vegetation, even at high elevations; that Pinus Contorta is the most accommodating species on peat of the Seirpus and Eriophorum type.

Mr. Holmes told the party that to-day the Forestry Commission's treatment of this ground would be to plough it and plant Sitka Spruce on the ridges. Artificials, he said, would not be necessary. Where ploughing was not feasible, the results of these experiments would be a useful guide towards the treatment to be applied.

The party then had lunch.

From the overheard discussions and questionings, etc., it was evident that the trial plots had proved to be of the greatest interest.

In the afternoon members were surprised to see Pinus peuke and Pinus excelsa excel Scots Pine when growing on a moderate south-easterly slope between 900 and 1,150 ft. elevation. Mr. Long told us that the Pinus peuke was absolutely free from *peridermium* and Mr. O'Beirne remarked that at Avondale a plot of that species remained free from this disease, although a plot of P. monticola close by was heavily infested.

Plots of P. Contorta seen were badly attacked by Myelophilus-piniperda, but were nevertheless growing steadily. Mr. Long here mentioned that P. contorta seedlings often appear in their sitka spruce seed-beds. He could never find a satisfactory explanation for this, as there were supposed to be no P. contorta growing in the locality from which they received their Sitka Spruce seed. So numerous were these seedlings he was, on occasions, able to depend upon them to meet his requirements. Mr. O'Beirne mentioned that he had had similar experience. In a discussion as to the merits of the different types of P. contorta, Mr. O. V. Mooney considered the type with the spreading habit was preferable to that of erect habit for the planting of heather ground. The spreading type would kill off the competing heather earlier—thus ensuring more rapid establishment. Mr. Forbes remarked that he was inclined to agree with this view.

A plot of *Thuja plicata* (p/27) was next seen. It appeared to be free from the "shot-hole" disease (Keithia). We were informed that Thuja was coming into favour in Wales, and was found to grow well on old red sandstone sites. Although Keithia was generally fatal in the nursery, it was not serious in established plantations.

In a very fine Japanese larch stand, growing on what was originally a vaccinium—calluna slope, Mr. Long said that while European larch had been giving poor results in Wales, they found the Japanese species very dependable. In consequence, a good deal of the latter was being planted. The Japanese larch was planted at 5 x 5 ft., and thinning was commenced at 12-15 years. Mr. Clear advocated a wider spacing than 5 ft. and Mr. Long replied that the tendency in Wales was in

that direction, as they considered that Japanese larch ranked close to poplars as a light demander.

After the party had seen some interesting Sitka and Norway Spruce stands it passed along a forest road, which was in course of construction, and emerged on open ground. Here members were deeply interested in a practical demonstration of the extraction of light poles from an awkward situation, by means of a light overhead cable.

In the evening members visited Snowdonia National Forest Park and were entertained to tea by the Forestry Commission. Mr. Long, after welcoming the party, explained the method of, and the reason for, ploughing land prior to planting. He told how it originated. Some years ago he and Mr. Meldrum noticed furrows in an area that had been cleared of a timber crop. Enquiries revealed that the area had been ploughed with oxen some 80 years previously when the plantation was being laid down. The trees which grew on the ploughed area were larger than those which were on adjoining unploughed land. It was decided to experiment with ploughing. After many trials and setbacks a suitable caterpillar tractor plough, capable of producing a deep furrow, was devised. On the upturned sod the trees were planted. This method enabled small plants to be used, as weeds were kept down. It resulted in breaking up pan formations which were near the ground surface, thus ensuring better drainage and aeration of the soil. Ploughing was found to reduce establishment costs by as much as £3 per acre. Ploughing is particularly useful on heather-clad slopes and on land where the surface layer has been consolidated by the treading of sheep. Mr. Long promised the party that it would be given an opportunity of seeing their different types of ploughs at work on the following day.

Second Day

On Wednesday, May 25th, the party visited Clocaenog Forest, one of the largest in Wales. On the outward journey, views of the Denbighshire Moors were seen—areas typical of the ground we were about to visit—i.e., rolling upland moor ranging from 1,000-1,700 ft. elevation. Most of it was exposed and carried a dense crop of Calluna, with (on the drier slopes) an admixture of Dwarf furze (u. gallii). In 1931 ploughing was commenced, and to-day it is the general practice there. The species generally planted are: (i) Norway Spruce—on the better ground and in frost hollows; (ii) Sitka Spruce—on the poorer, upper ground; (iii) Scots pine—on the more sheltered, rocky portions, and (iv) Pinus Contorta—on the poor, exposed rocky areas. Japanese Larch was planted on the bracken covered slopes at one time. It grew coarsely, however, and as a result it is no longer planted on this type of ground, but is restricted to bilberry (vaccinium) areas.

At the Nursery Mr. Holmes explained how the Forestry Commission was experimenting in the use of heath-land nurseries. These nurseries were found to remain weed-free for at least three years—with resultant reductions in costs. The type of land most desirable was moorland with a heather vegtation and a pH value of 4.5-5. The heather is first cut and

burned and the area is then shallow ploughed, the object being to invert the entire surface layer. The ground is then disced and cross-disced again and again, to chop up the heather roots; it is then harrowed to collect the roots; it is then disced again. The area intended for seed beds is treated with spent hops at a rate of 1,000 lb./100 sq. yards, Superphosphate—12 lb., and Nitro Chalk—6 lb. The seeds when sown are covered with fine lime-free stone chippings. The preparation of Compost for the Nursery was explained by Mr. McNulty.

After leaving the Nursery members were taken to see the different types of tractor ploughs used by the Forestry Commission. Brigadier Gen. Bowen demonstrated each on the three types, and members were very much impressed by the results obtained. Ploughing furrows at 5 ft. spacing these ploughs can do up to 8 acres a day on suitable land.

Third Day (May 26th, Ascension Thursday)

After Mass, celebrated at the hotel by the Very Rev. Fr Donnelly, P.P., the party travelled by bus through the Conway Valley to Gwydyr Forest. Gwydyr is the largest forest in Wales, and forms part of the Snowdonia Forest Park. On arrival at Gwydyr, Mr. Best introduced the Head Forester, Mr. Harrison and Mr. Ryal, the "beat" Forester. He pointed out that there were two main types of ground in this forest. The first was a plateau area over 600' elevation, very rocky and complicated by impeded drainage and pockets of deep peat. This ground varied abruptly necessitating corresponding variations in the species used. The second type of ground was found on the steep slopes where Larch and Douglas Fir grew vigorously.

Mr. Best told of the fire hazard in that area and the measures taken to reduce it. He said that the fire protection cost at Gwydyr forest was 7/- per acre, while that for Wales as a whole was 3/6 per acre per annum.

At Nant Valley we saw very vigorous stands of Japanese Larch on bilberry and heather ground, even in exposed situations. A pine area with Japanese Larch pockets, had been burned the previous year. The pine was killed but the Larch survived and was still growing well—thus proving its value as a fire-belt tree.

An interesting plantation showing natural regeneration of Sitka Spruce, Douglas Fir and European Larch was seen. Mr. Long explained that as a result of a severe snow-storm, this mixed wood had been opened out. The following year natural regeneration of a number of species was noticed. The area was then fenced against rabbits, but no special soil preparation was carried out. The result was most encouraging. With regard to Douglas Fir, it was their experience, he said, that when planted in the open it tended to produce rough timber. Consequently they now planted it in the partial shade of inferior quality oak stands which had been opened-up by fellings and ringing of some stems. By this method a very fine-branched type of Douglas was produced. It was found that infestation of Chermes which occur on Douglas fir when so planted, do not persist beyond the early years of establishment.

A visit was next paid to the saw-mill or "produce dump" where various lines, including stakes, telegraph poles, ladder poles and wood wool were being prepared. A large shed stood close by, where the men were employed at various tasks such as creosoting stakes, making gates, etc., during wet weather. The stakes were creoseted by the 'hot and cold tank' method. The labour cost was estimated at ¼d per stake, and the total cost was 5d. per stake. Any conifer so treated would have ten times the life of untreated larch.

After lunch we crossed the Miners' Bridge to the plantation at Diosgydd. On entering a mixed Japanese larch and Sitka Spruce plot (P/21). Mr. Long stated that the original intention was to have the larch act as a nurse. The stand was not thinned in time and the spruce was suppressed. When thinning was carried out however, the spruce improved wonderfully. Mr. Forbes told of a somewhat similar occurrence at Avondale.

Very promising plots of Thuja, Abies Grandis, Abies Nordmaniana and Corsican pine were also seen. A very poor stand of European larch (P/21) was seen growing beside a Douglas fir plot of the same age. In the latter there were a few very fine specimens of larch. These had evidently been planted with the fir, by mistake and probably came from the same source as the larch in the adjoining plot. Their vigour appeared to be due to their isolation, which rendered them less liable to disease.

A 26-year-old stand of Sitka spruce on a fertile alluvial site had recently been heavily thinned. It contained very fine trees averaging 68 ft. in height. The average crown depth for the stand was 25% of the total height.

In the afternoon, the party visited Gwydyr Forestry Training School and was entertained to tea by the members of the staff. Mr. O'Beirne, on behalf of the Society, thanked Mr. Cruickshank, Chief Instructor, and his colleagues for their very great kindness, and said he hoped that some day, in the not too distant future, it would be our pleasure to welcome them all to Ireland. After tea, members visited the library, museum, seed kiln, work shop and other parts of the School.

That night the Society of Irish Foresters entertained the members of the Forestry Commission Staff and others associated with them during the previous days, to dinner at the Royal Oak Hotel. Mr. J. A. K. Meldrum proposed a vote of thanks to Mr. Long and his colleagues for their very kind invitation to visit the forests of Wales. He expressed appreciation of the excellent arrangements which had been made. Referring to the acquisition of land for forestry he said he was pleased to learn that it was less a problem in Wales than in Ireland.

Mr. H. M. FitzPatrick, seconding the vote, said he was very much impressed by what he had seen during the excursion. He recalled that he had once served with the Forestry Commission and after his visit to Wales he felt a certain regret that events had not enabled him to continue in that Service. Mr. O'Beirne said there was a bond of friend-

ship between foresters the world over—a bond which was not affected by boundaries or barriers. Mr. Clear, as Secretary of the Society, thanked the Forestry Commission Staff for the painstaking and courteous treatment afforded to us. The excursion had surpassed all expectations. Mr. A. C. Forbes, Very Rev. Fr. Donnelly, P.P.; Col. Wynn Finch and Mr. Best also spoke.

Mr. Long, replying, thanked the Society for their kind and appreciative words. They were very pleased that their Irish friends had found so much of interest.

CORRESPONDENCE

Capenoch Estate Office,
Penpont,
Dumfries-shire.

Dear Sir,

Can any reader of *Irish Forestry* tell me where there are Deodars (*Cedrus Deodara* Loudon) growing in Ireland; whether they are single trees, in groups or planted in woods along with other trees? I am particularly interested in this as last Spring I obtained Deodar seed from India and it has germinated well.

There are a number of Deodars on this Estate, probably about 80 years old, all healthy trees, windfirm and apparently unaffected by frost. My best tree here has a girth at breast height of 9 ft. 1 inch, and is about 60 feet high.

The Deodar seems to grow well in this part of Scotland; and it is interesting to note how familiar our climate is to that of the districts in the western Himalayas where the Deodar is indigenous.

Troup: *Silviculture of Indian Trees*, Vol. 3, pp. 1096-1132.)

Yours, etc.,
JOHN GLADSTONE.

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Report On Excursion To Avondale

By J. J. DEASY

The sun shone gloriously at Avondale on Sunday, August 29th. The old Georgian mansion looked a picture in its pleasant setting overlooking the wooded valley of the Avonmore. Once the home of Charles Stewart Parnell, it has been since 1904 the State Forestry School.

At noon over 60 people had gathered on the lawn to attend the Society's first Sunday excursion — among them foresters who got their early training at this school in the first decade of this century.

Mr. M. O'Beirne, the Society's President and Instructor-in-charge of the Forestry School, acted as convener. Mr. J. O'Carroll, District Officer, welcomed the party on behalf of the Minister for Lands.

Mr. H. M. FitzPatrick, Councillor, gave the gathering a resume of the history of the estate, as outlined in Vol. III, No. 2 of this journal.

The party then got moving and were conducted through the courtyards, where they saw an experimental timber-drying kiln in the course of construction, to the nursery close by. With an area of $2\frac{1}{2}$ acres this walled-in nursery, once a kitchen-garden, has a N.E. aspect and a light loamy soil. Visitors were impressed by its spick and span condition and by the vigour and quality of the young trees. Among the rarer species were Abies Amabilis from W.N. America, Cedars from the Himalayas, Pinus Pinaster and Pinus Pinea from South Europe, Snake-branch Spruce from Scandanavia, Ginko biloba from China and Cryptomeria Japonica.

In some lines of Poplars raised from cuttings were P. Serotina, P. Regenerta, P. maximowiczi, P. Yunnanensis and P. Generosa. The convener mentioned that the last named was interesting in that it was the first hybrid between a balsam and a black poplar produced artificially. It was derived from a cross made by Professor Henry of a male P. Trichocarpa with a female P. Angulata. An extremely fast grower, it is very liable to break in strong gales and is susceptible to canker. Therefore the planting of it on a large scale is not to be recommended. He mentioned that, generally speaking, P. Serotina, one of the Black Italian Poplar, is one of the safest to cultivate.

Members were shown 19 different species of one-year-old Eucalypts derived from seed presented by the Forestry Department of New South Wales. None of those species was represented at Avondale up to this, but it is hoped that most will prove hardy as the seeds were collected from trees grown under climatic conditions approximating as closely as possible to our own.

From the Nursery to the Forest Museum, where much interest was displayed in the specimens of the various timbers, some wavy, grained Oak, and a spiral-grained log of Scots Pine which had been

dug out of a bog. Having brushed up their knowledge of Irish history of the past 200 years as chronicled on the cross-section of an Oak tree, the party left the museum and proceeded to inspect some plots and specimen trees of Cricket Bat Willow, Pterocarya Caucasica, Acer negundo, Quercus rubra and various Poplars. Lunch was served and members appreciated the service provided by the Matron, Mrs. Devane, and the students. This was followed by a visit to the Parnell Museum, which occupies one of the rooms of the House.

The party then began a tour of the woods beginning with the plots of Eucalypts. (For notes on these plots see " Irish Forestry," Vol. II, No. 1, May 1945). Then on to the main ride, glancing on the way at such members of the Birch family as B. lutea, B. lenta, B. papyrifera and B. Maximowicziana, and examining some plots of Elms, comprising English, Wych ,Chichester (which seemed to have made the best growth) and American Elm.

Having reached the main ride the party halted for a brief spell at a vantage point. In front of them lay the magnificent ride 3 chains wide, flanked on either side by 60 one-acre experimental plots. At the end, where the ride widens to form a circle, was seen a " cairn " which was erected in 1909 to the memory of Parnell on the suggestion of Mr. T. P. Gill, the then Secretary of the Department of Agriculture.

Among the species in the experimental plots, two in particular towered above the others. These were Abies Grandis and Pinus Radiata. The former plot was 10 chains long by 1 chain wide and on either of its long sides lay plots of *Abies Nordmanniana* and *Abies Nobilis* respectively. The members were deeply impressed by the crop and by the following details given by the convener:— In 1905 the plot was planted with Abies Grandis and Abies Pectinata at a spacing of 4' x 4' in 25/75 mixture, the former intended as the main crop. The latter, which suffered severely from frost, was killed off by disease at an early date.

For the years prior to 1943 there is no available record of the thinnings, but it estimated that, as a result of windblow in 1935, 300 cubic feet U.B. was removed and that in the period 1934-1943 200 cubic feet U.B. was taken out as thinnings. Available records show that from February, 1943, to May 25th, 1944, 1,031 cubic feet U.B. was removed in thinnings. On measuring the plot on that date it was found there were 328 trees standing with contents of 7,872 cubic feet U.B. Heights to tips of trees felled at that time were: (1) 87½', (2) 85', (3) 92', (4) 102'. Between that date and August, 1949, 93 trees were felled or blown with a total content of 2,673 cubic feet U.B. On measuring the plot in August, 1949, it was found that there were 235 trees standing with a total content of 12,064 cubic feet U.B. [At that date the marginal row on the south side contained 48 trees with an average tree of 17½" Q.G.B.H. On the assumption that the mid

Q-G was 12" and the height to 3" diameter 90 feet the contents U.B. of this row was 3,888 cubic feet, which meant that it contained 1/5 of the total number of trees in the plot and 1/3 of the volume]. Working on the aforementioned figures the total yield from this acre from 1905 to August, 1949, was 16,268 cubic feet U.B.

A stop was made in C.14 at a line of 15 trees of Polish Larch [Larix decidua, var Polonica, Ostenfield or Larix polonica, Raciborski]. Some botanists maintain that this is a separate species of larch, while others regard it as a form between Larix decidua and Larix siberica. It is found in a fossil state in Poland. On the occupation of part of Poland by the Wehrmacht the German forest botanists called it Welchsel-Lärche, meaning larch from the Vistula. The cones and seed are smaller than those of Larix decidua. It is said to be capable of growing successfully in pure or mixed stands, is comparatively frost hardy and practically immune from larch canker. The Avondale trees comprise a row on the margin of a small plot containing Silesian larch [Larix decidua var Silesica]. Larix occidentalis and Larix dahurica, the different species separated by rows of Retinosporas. The line of Larix Polonica stands at the original spacing of 5'. The plants were sent to Avondale by the late Prof. Henry in 1925. In 1949 the average tree was $7\frac{3}{4}$" Q.G.B.H.; with a timber height of 50 feet and a volume of 14.27 cubic feet U.B. Of the original 15 two got suppressed but all remained healthy and show no sign of canker. The bark is thick and broadly fissured. As the timber is said to be equal in quality to that of Larix decidua it was suggested that the tree has a future in this country.

The party then moved through plots of Thuja, Sequoia, Cryptomeria, past the old giant Silver Firs at the river and then returned to cross the foot-bridge into compartment 8. Here were seen some magnificent Douglas Firs and Norway Spruce 43 years old. This was contrasted with the plantation of D.F./E.L. on the right bank of the river, which when 26 years old, suffered considerable damage from a snow storm. Environmental conditions seemed similar in both plantations which led to the question of the snow damage on one side of the river only. Mr. Clear said the reason was manifest in that in D.F./N.S. mixture the N.S. was partly suppressed leaving the D.F. more room to develop into sturdy trees—an argument in favour of wider planting distances and early and pretty heavy thinning.

The party then recrossed the river and braced themselves for a steep climb through an excellent plot of 43 year old Tsuga heterophylla and on through a plot of Cupressus lawsoniana of the same age.

On reaching the top of the slope a brief stop was made at groups of Abies pindrow—one of the Himalayan silver firs, Abies squamata, the Chinee flakey-bark fir, Pinus excelsa, also from the Himalayas and Pinus monticola, from the Pacific coast of North America. The last-mentioned was badly affected by Pine Blister Rust, Cronartium ribicola.

On the way back to Avondale House, the excursionists passed along by the margin of the Pinetum. A halt was called at a group of larches. The announcement at this point by the convener that a new hybrid had been born at Avondale created quite a stir. Mr. O'Beirne explained that the group he was standing at were produced from seed which he collected from a tree of Larix kurilensis which grew beside and was partly shaded by a Japanee larch. Early in life these young trees showed characteristics of both these presumed parents and have maintained them to this day. The trees of this group are now 7 years old from seed and some are 15 feet high. In contrast, the Kurile larch parent has made very poor growth. Mr. O'Beirne proposes to name the hybrid "Larix kurilepis." The last to be examined were a specimen tree of Pseudo Larix, a group of Larix eurolepis produced from seed from the Dunkeld hybrids and a group of three trees of Larix Potanini (Larix Tibetica).

Before breaking up Mr. Clear drew attention to the fact that it would be the last time that their President and Convener would be with them in his official capacity of Forestry Inspector as he was due to retire shortly. He thanked Mr. O'Beirne for the manner in which he conducted the party and wished him many happy years. Mr. FitzPatrick then called for three cheers " for the first Irishman to become a really great forester." Mr. O'Beirne replied suitably and the party dispersed after a most enjoyable and instructive afternoon.

Day Excursion To Urlingford Forest

(REPORT BY O. GRANT)

THE Society of Irish Foresters, in conjunction with the Kilkenny Archaeological Society, paid a visit to Urlingford Forest on Sunday, 9th October. Mr. O'Leary, District Forest Officer, on behalf of the Minister for Lands, welcomed the party of over 70. The Archaeological Society was captained by Mr. Hubert Butler.

At 1.30 we moved off through the forest. The gathering clouds which earlier had seemed to promise ill weather dispersed. Our way was along a forest road, bordered to right with 12-year-old Spruce and Oak plantations and to left with mixtures of S.P., Larch and Oak of similar age. A nearby group of Oak, planted at a spacing of 18 inches in a matrix of Scots Pine at 5' x 5', was then examined.

Moving on, we left the bright sunlight to enter the trellis-like shade of an old hardwood block of Beech, Oak and Ash, some 150 years old. The block had been worked by the former owner under the Selection System and promising groups of naturally regenerated Beech were visible on all sides. After heavy opening out two-year-old Oak had been interplanted at 3' x 3'. In one corner a truly noble oak stood. With a girth of 9 feet 8 inches over bark at eye level, the tall, symmetrical bole, over fifty feet in height, of even taper and flawless form, reared itself aloft like a Roman column.

After lunch in the forest nursery Mr. H. M. FitzPatrick spoke on the Selection System of forest management as opposed to the system of high forest with clear felling and replanting. Mr. Fitz-Patrick skilfully restated the arguments, pro Selection System of Mr. Ponsonby and pro High Forest of Mr. A. C. Forbes, in their controversy of 1933. Mr. O'Beirne followed with a short talk on the strip method of natural regeneration.

Resuming, we visited a pure Scots Pine wood, twenty-eight years old, on wet Molinia peat over marl. The growth of this stand in recent years had not been satisfactory; bark beetles and Pine Shoot beetles had been busy. Mr. Mooney explained that the drains had just been deepened and extended and it was hoped that the stand would benefit considerably by the reduction in the level of the water table. Sickly trees were also being removed.

Next we followed the Serpentine Avenue, which twists through mixed stands of Birch, Ash and Oak with Sitka Spruce underwood. The Sitka suffered severe frost damage in May, 1943. Only some of the injured trees were showing signs of recovery. The stands were a good illustration of the vulnerability of Sitka to frost when planted at low elevations in the Midland Plain. Though well over fifteen feet in height and sheltered by the overwood, they had been burned from tip to lowest branch. Mr. Mooney initiated a lively debate on their probable future. Mr. Clear treated of the use to which Birch is put in Sweden for plywood production, and Mr. McEvoy spoke on the possibility of establishing such species as Abies Grandis.

We next visited an experimental plot on which, in 1943-'44 Huffel's system of "Futaie Claire," or method of conversion of coppice with standards to irregular broadleaved high forest by selection, was initiated. The area, two acres in all, had originally been stocked with a dense crop of Ash, Birch and Alder, twenty feet in height and of an average quarter girth breast height of 4½". A profuse growth of Hazel covered the ground beneath the trees. In November, 1942, a heavy opening out was made, leaving only promising standards. These were left evenly distributed over the area, 229 of them in all, comprising 91 Ash, 96 Birch and 42 Alder. The Hazel was completely cut out and, together with the debris left from the thinning, was piled about the lower stems of the selected trees. In March, 1943, interplanting with Norway Spruce, Scots Pine and Beech took place. The Beech and Scots Pine were mixed fifty-fifty on the drier banks and the Norway Spruce was planted pure elsewhere. In all, 400 trees to the acre were planted at a spacing of 5' x 5'. The selected stems were seen to be developing fair crowns, and the underplanted species were coming away well. Furthermore, the high heaps of debris which had skirted every tree of the overwood were perceived to have practically disappeared.

To conclude our itinerary, we visited a stand of Jap. Larch which had been heavily thinned during the past eight years. The trees had developed good spreading crowns and were rapidly putting on increment. The stand was sheltered by a Douglas Fir screen. Intermixed with the Douglas Fir were some fine stems of Silver, which were forging ahead at a rapid rate. This closely spaced Douglas screen was achieving a cleaning of the Silver Fir stems, while, at the same time, serving to protect the Jap. Larch wood.

Before dispersal we inspected the ruins of Kilcooley Abbey.

Report On Excursion To Clondalkin Paper Mills

By courtesy of the Management, a party of some 60 members of the Society visited Clondalkin Paper Mills on the afternoon of March 8th. The processes involved in the manufacture of various grades of paper were explained and demonstrated in detail by members of the factory staff who conducted the tour.

8th ANNUAL GENERAL MEETING

REPORT BY J. J. MAHER, B.AGR.SC.

The Eighth, and so far the most successful Annual General Meeting of the Society was held in Jury's Hotel, at 8 p.m., on Wednesday, 8th March, 1950. Members travelled from all over the country and the spacious room at the disposal of the Society was filled to capacity.

At the suggestion of the outgoing President, Mr. O'Beirne, who was in the Chair, the minutes of the previous Annual General Meeting, which had appeared in the Journal were taken as read and were signed.

The President then called on the Secretary to read the report of the Council for the year ending the 31st December, 1949.

COUNCIL REPORT FOR 1949.

The first meeting of the Council was held on the 5th February. Nine members were present. The new Council appointed sub-committees to deal with arrangements for excursions and the publication of the journal. The Secretary was able to report that the arrangements for the Wales excursion were well advanced. The Council decided on an ambitious programme of day excursions including a visit to Messrs. T. & C. Martin's sawmills at the North Wall and to Birr Castle in the Spring.

The Council met again on the 7th May. Seven members were present and the final details of the Wales excursion were arranged.

An informal meeting of the Council was held in Bettws-y-coed in May. A further meeting was held in July and plans made for autumn excursions to Avondale, Urlingford and Glencree. The Council met on the 26th November. Eight members were present.

MEMBERSHIP

During the year 17 Associate, 15 Grade II and 3 Grade I members were enrolled. An analysis of the roll book shows that, with new enrollments and losses due to deaths, resignations and lapsed membership, there are now 93 Associate, 39 Grade I and 59 Grade II members. There is a very welcome increase in the number of technical members joining the Society. This is indeed most encouraging and with several lapsed members re-enrolled in recent months it would appear that the Society is now getting into flourshing conditions. Out total membership is still short of the 200 mark and as a result income is just sufficient to cover the bare essentials. We got many new enrolments as a result of members introducing friends to our day excursions.

FINANCE

The abstract of accounts for the year 1949 has been in the hands of members for some time. You will note that £34 was outstanding at the end of 1949. This gives some indication of the serious danger of wastage by lapsing of members in arrears. We are again indebted to Mrs A. H. Henry for a further donation of £25 to forward the work of the Society. The Council wishes to pay special tribute to our Honorary Auditor, Mr. D. M. Craig, for his capable assistance and advice on matters relating to the finances of the Society.

JOURNAL

Two issues of the journal appeared during the period under review. Our journal continues to be favourably commented on by readers at home and abroad. Mr. McEvoy, the retiring Editor, has earned our best thanks for the capable way in which he handled this onerous job. The Business Editor has been active and also very successful in securing reasonable rates for printing and also in obtaining considerable revenue from advertisers. The cost of producing the journal in recent years tended to become increasingly onerous and was causing considerable concern to the finance committee. The revenue from advertising and sales now covers 50% of the cost of production and every effort is being made to increase our sales and advertising revenue.

EXCURSIONS

1949 was the best year yet for excursions. The Sociey's outings were all favoured by good weather and big gatherings congregated at Avondale, Urlingford and Glencree. The Society is deeply indebted to the Minister for Lands and the officials of the Forestry Division for the facilities provided on the occasion of these visits. The visit to the estate of the Earl of Rosse was one of the big events of the year and the excursion to the mills of Messrs. T. & C. Martin was most enjoyable and instructive.

However, the high-light of the year's activities was the visit of the Society to North Wales, 50 members attended and no words can express our appreciation of the wonderful hospitality and the completeness of the arrangements made by our hosts of the Forestry Commission in Wales.

AUGUSTINE HENRY MEMORIAL

For some time our Society has been anxious to pay a tribute to the memory of that famous Irish forester, the late Professor Augustine Henry. The Council is now pleased to announce that, with the co-operation of the Minister for Lands, a Memorial Grove is to be planted at Avondale. Final arrangements have been left in the hands of the new Council.

On the motion of Mr. Langley, seconded by Mr. McCormack, the report was unanimously adopted. Both members paid tribute to the excellent work of the office bearers and councillors during the year. which had contributed in no small way to the present flourishing condition of the Society.

Abstract of Accounts.

The Abstracts of Accounts, which had been forwarded to all members, was then considered, and on the motion of Mr. Rynne, seconded by Mr. Sharkey, its adoption was unanimously agreed to.

PRESIDENT'S ADDRESS

" The past year has been a memorable one from the Society's point of view. The most outstanding event was, of course, the Annual Excursion to Wales, which proved an unqualified success. We owe a debt of gratitude to the Forestry Commission for the facilities afforded us, and for placing at our disposal members of their technical and experimental staffs who spared no effort to make our visit a most pleasurable and instructive one. The caterpillar tractors, ploughing the hillsides and swamps, rendering waste ground fit for planting, made a profound impression on our members. I hope that before the end of next year we will have the pleasure of seeing our Forestry Division initiating this method, and thereby rendering less inhospitable to tree growth those vast tracts of impoverished mineral soil and peat which by the ordinary methods at present in vogue must be counted unplantable or extremely doubtful.

" The second item of note is the public interest aroused in the value of and urgent need for the 25,000 acres a year planting programme sanctioned by the Dail. The responsible Department is making great strides in the acquisition of land and extension of nurseries to implement this programme, and it is my earnest wish, as I know it is yours also, that by 1952 it will be a reality.

" During the year a number of local or one-day excursions were organised. They were well attended and not only provided interesting discussions on many aspects of the work, but also aroused local enthusiasm, and enabled many members who could not take part in the annual excursion to enjoy the benefits of the Society at home.

" In the remaining time available to me I take this opportunity of expressing, on my own behalf and yours, most grateful thanks to our honorary member, Mrs. Henry, for her generous contribution to the funds of the Society. All her life, both in collaboration with her husband, the late Professor Henry, and since his death, she has ever been to the forefront in the cause of Forestry, and no words of mine could adequately express our thanks. I am glad to be able to inform you that through the good graces of the Forestry Division, the Society is at present establishing a memorial plot to the late Professor Henry at Avondale, the State Forestry School.

" In conclusion I wish to thank you for the confidence you reposed in me by electing me President for two successive years and to thank the office bearers and councillors for their assistance and co-operation. I have now great pleasure in handing over to my youthful but distinguished successor and I wish him a successful period of office.

ELECTION OF COUNCIL

The meeting formally confirmed the election of the new Council as given on page 2. The incoming President, Mr. McEvoy, then took the Chair and paid a well-deserved tribute to his predecessor.

EXCURSION, 1959

The members approved of the Council's decision to hold the annual excursion in the Wicklow district, with Dublin as headquarters, on the 23rd, 24th and 25th May. Mr. Mooney would act as convener. The President when asking for approval of the Council's decision, informed the house that a large party of Welsh Foresters was expected and the Council was of the unanimous opinion, having regard to variability in plantations, amenities, etc., that the Wicklow district would be the most suitable venue. Mr. Mooney, the Convenor, then outlined the programme for the three days.

LOCAL EXCURSIONS

It was decided that the Council at its first meeting should draw up a programme of local excursions with, as far as possible, at least one local excursion in each Province.

This concluded the private business. The President then called on Mr. Morehead, O.B.E., B.Sc., I.F.S. (Burma) retd., a member of the Society, to read his paper on *The Necessity For A Forest Policy*, which is printed elsewhere in this issue.

DISCUSSION FOLLOWING MR. MOREHEAD'S PAPER

At the conclusion of the paper, the President called on Mr. J. A. K. Meldrum, Director of Forestry, to propose the vote of thanks.

Mr. Meldrum, in proposing the vote of thanks, apologised for the Minister, who he said was most anxious to be present, but unfortunately was prevented from coming as the new Land Bill introduced by him was under discussion in the Dail at the moment. " It has been a pleasure for me," he said, " to listen to this paper, brimful of common sense, and I am sure that I am only voicing the opinion of all in heartily congratulating the lecturer. Continuing, Mr. Meldrum outlined the progress, the achievement in scientific state afforestation, despite the general apathy of the people, culminating in the expansion of policy to reach a target of 25 000 acres per year by 1952. Once that target was reached state afforestation here would bear favourable comparison with the achivements of our neighbours. He wished to assure the members that the Forestry Division was fully alive to its duties and responsibilities and had taken active steps to ensure as far as humanly possible that there would be no hitch in pushing forward with the expanded programme. The first step in this respect was a survey to show the potential forest land in the Republic. This work had been completed recently, and though final figures were not yet available, he had no hesitation in saying that the potential area would be just over one million acres. 1" maps, the smallest practicable scale, were used and therefore, owing to the size of map, the limit of error would be in the neighbourhood of 5 per cent.

" The next important step," he said " was Land Acquisition, and in this respect it was a pleasure to inform the members that the staff had been increased during the past year and was to be increased still

further in the very near future. The necessity of this was apparent to anyone conversant with the complex land tenure in this country, and the absence of consideration of a forest policy in the framing of the Land Acts. Land acquisition would continue to be tedious and slow. He did not expect a miracle, but was confident that the target aimed at would be reached and the large concentrations of potential forest land put to proper use through the co-operation of the Irish Land Commission and Department of Agriculture without a disturbance of agricultural economy.

In conclusion, he stressed the need for extending the scope of education in the National University and the State School at Avondale, and the need for propaganda to educate the people in the need and value of forestry, which should be co-equal with agriculture in national economy.

Mr. FitzPatrick, in seconding, complimented the lecturer for putting in such a clear and concise manner all the requisites for a detailed national policy, which well-informed foresters here had often talked about and know to be necessary. He heartily agreed with all the points made at the end of the address, and stressed the need for a detailed forest policy and the extension of the present educational system in the University and the State School at Avondale, to embrace research in economics, sylviculture and utilisation. "Up to the present we are dependent," he said, "for the most part on results from other countries, but if we are to put the expanded programme into operation we will have to tackle scientifically the many problems peculiar to our own country."

He welcomed Mr. Meldrum's announcement in connection with the survey of potential forest land, which would now override the many forecasts in the past and serves as a basis on which to build a forest policy. There was a danger, however, he continued that this scheme and the Rehabilitation scheme would clash unless the scheduling of areas had been carried out in close co-operation between the two Departments, for what might be considered as forest land in the east may not appertain to the west where congestion and land hunger were so apparent.

Mr. Forbes, Colonel MacGan and Mr. Ussher were among the many members who contributed to the discussion. The President, in conveying the vote of thanks, stated that the lecturer had shown clearly the need of a full and formal declaration of forest policy. He stressed the need of keeping the public informed and in this matter the Society had a very important function. Each member could play his part by introducing at least one new member each year.

Membership Application Form

I desire to become a member of the Society of Irish Foresters, and enclose Cheque/P.O./M.O. for ...., being subscription for year .....

Full Name .....

Occupation .....

Postal Address .....

Signature .....

Date .....

Block Letters

To be forwarded when completed to the Secretary at Albert Agricultural College, Glasnevin, Dublin.

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.

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

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Associate Members shall pay	...	...	...	15 0

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