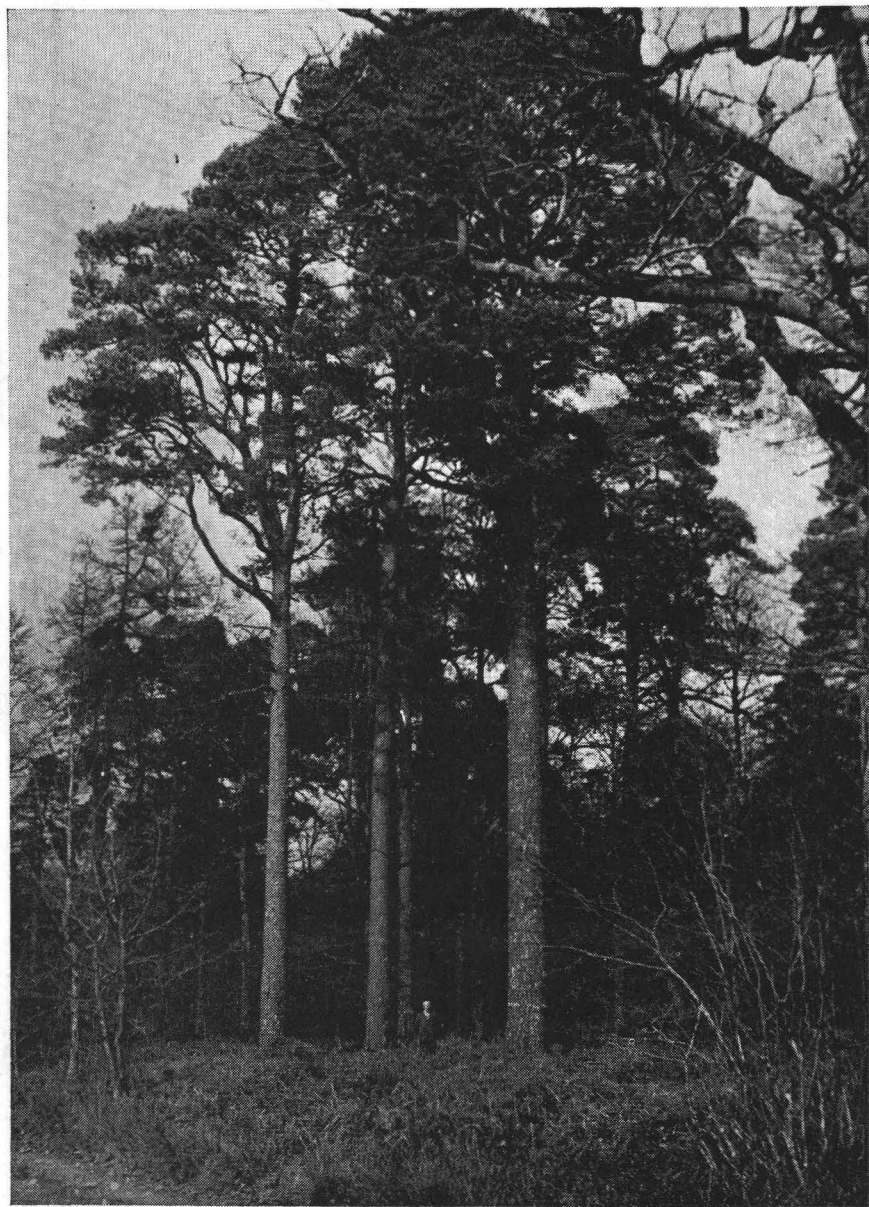


IRISH FORESTRY



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SUMMER, 1956

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IRISH FORESTRY

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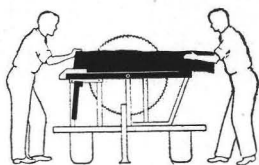
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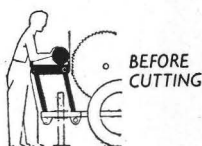
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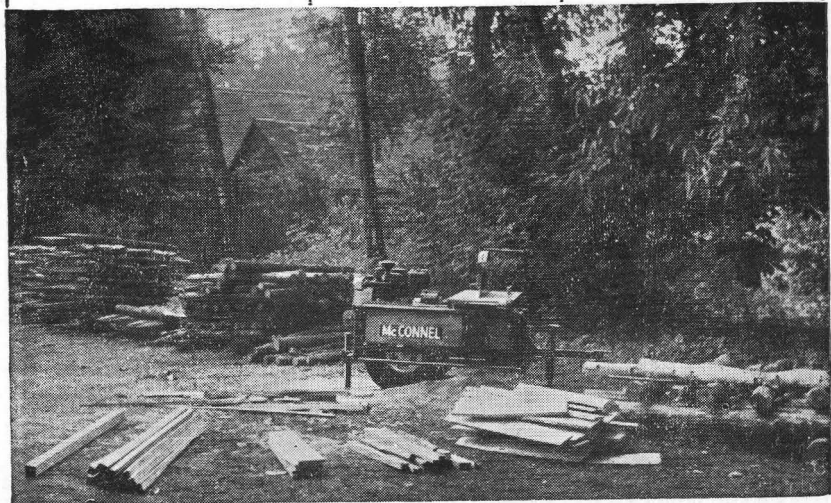
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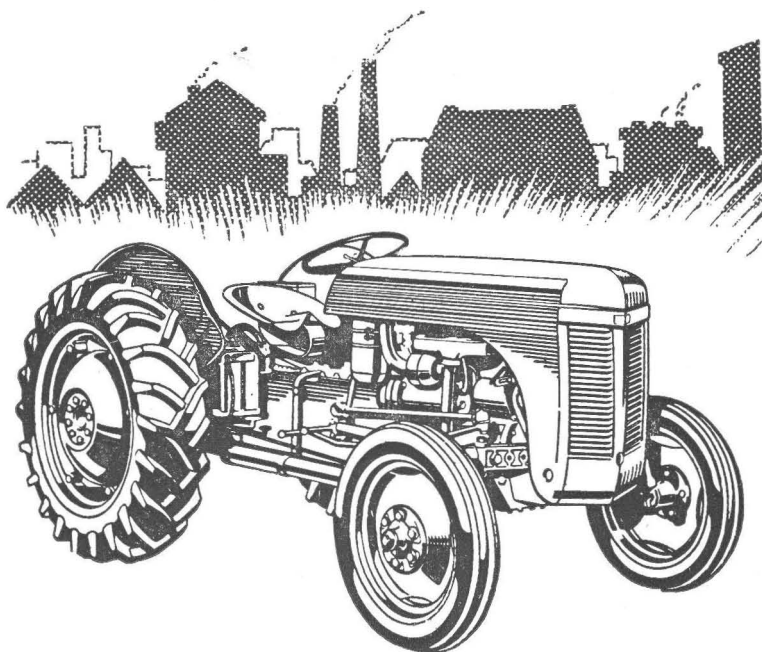
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IRISH FORESTRY

VOLUME XIII

SUMMER

NUMBER 1

Editorial

The Society.

IN the fourteen years of its existence this Society has made a valuable contribution to Irish forestry. Its efforts have been directed mainly towards education and foremost among its activities in that field have been the organising of study tours in places of forestry interest at home and abroad, the presentation of scientific papers at its annual general meetings and the publication of a journal twice a year.

The study tours have enabled foresters to keep themselves up to date in many aspects of their work and have provided opportunities for the critical examination on the spot of problems of a technical nature. At those gatherings participants have heard specious arguments refuted, erroneous ideas corrected and much valuable information disseminated.

At its annual general meetings, papers on varied aspects of forestry have been read by distinguished foresters from this country and abroad followed by discussions in which our members freely participated.

Through its journal it has given to members useful articles on many facets of the propagation and growing of trees and the harvesting and utilization of forest crops.

Forestry has already become a significant industry in this country. Year by year it is increasing in importance. Hand in hand with this growing importance will go the increase in usefulness of our Society. New questions will be constantly cropping up as the scope and complexity of the work increase. Greater than ever will be the need for careful examination of problems and all the more desirable will it be that foresters should have an up-to-date information service and that they should have opportunities to meet and exchange views on various aspects of their work.

In order that the Society may play its full part in this important work it is desirable that all practising foresters in the country should be among its members and that as many as possible of private planters and forestry enthusiasts should be enrolled.

A study of the membership figures shows, however, that only about 50% of our foresters are on the Society's list and the number of associate members in no way represents the great body of genuine forestry enthusiasts in the country. By substantially increasing our membership

we can avoid the unpleasant necessity of raising annual subscriptions, produce a better journal and produce it more frequently and generally give a better service to members.

It is suggested therefore that in this matter of recruitment members should make a special effort during the coming year. In so doing they will be furthering in a very real way the object of the Society, namely, "To advance and spread the knowledge of forestry in all its aspects."

Forestry Act, 1956.

Legislation dealing with forestry in this country is based on the Forestry Act, 1946 and now, ten years later, comes a new Forestry Act which was passed through both Houses of the Oireachtas and received the President's signature in February of this year. The new Act entitled "an Act to facilitate acquisitions of lands for the purpose of the Forestry Act, 1946" is concerned solely with the amendment of the provisions of the 1946 Act which relate to the acquisition of land. Two main types are covered :—

- (1) the case where the sale of land to the Department falls through because of defects in the title of the would-be vendor, and
- (2) the case of the commonage area where the majority of the commonage holders are prepared to sell their shares but one or two refuse and thus prevent sale.

It will come as a surprise to some to find that the machinery which the Act proposed to utilize for the resolving of these difficulties, which are in the main matters of voluntary agreement, is the power of compulsory acquisition enshrined in Part 3 of the Forestry Act, 1946.

To the layman the procedure may seem unnecessarily cumbersome but it must be conceded that the acceptance of imperfect title or the restriction of recalcitrant commonage holders to a specified part of a commonage involves the possibility of a breach of the rights of private property and that all necessary safeguards against such a breach are provided in the basic legislation. We may assume, too, that the Draftsman had recourse to the powers of compulsory acquisition as the one sure means of giving the Minister clear and incontestable title to the land acquired and the Minister made it clear in the course of debate on the measure that this consideration was of paramount importance : that public money should not be spent on the development for afforestation of an area to which his title might at some later stage be contested and upset.

The Act provides that in the first type of case, that of faulty title, the Minister may accept incomplete title and pay compensation subject to his remaining liable for a period of six years to a claim for compensation by a person claiming to be the rightful owner. In the event of the second claim being established and compensation being paid a

second time the Minister would have power of recovery against the party to whom payment was first made but it was admitted in the course of debate that the prospects of actual recovery would be very slight.

With regard to commonages the Act provides that commonages may be partitioned, the commonage holders who are not prepared to sell being given exclusive enjoyment of a restricted portion of the commonage and the balance being handed over for afforestation. Power to decide whether any part of the commonage may be acquired for forestry, and, if so, what portion is to be reserved to the "objector" lies, of course, with the Land Commission under the procedure already established for compulsory acquisition in the Act of 1946.

In presenting the measure the Minister was understandably reluctant to give any estimate of the area which he might expect to acquire with the new powers available to him. Only experience will tell what the effects of the measure may be. All who are interested in the progress of forestry in this country will, however, welcome the measure and wish it success.

The Function and Form of the Working Plan, with Special Reference to State Forests.

By W. M. McNEILL, M.B.E., M.A.,

Lecturer in Forestry, University of Aberdeen.

(Paper read to the fourteenth Annual General Meeting of the Society.)

The Meaning and Significance of Forest Management.

AMONG the recognised branches of forestry, forest management is somewhat peculiar. As a subject it is much harder to define than silviculture, mensuration or utilization. This is because it is not so much a separate subject as the application of knowledge of all branches of forest science towards a predetermined objective, the implementing of a prearranged policy. Every scrap of knowledge, whether it be regarding the climate, the soil, the plants or the produce, must be considered and used. It is hard to know where to draw the line between management and administration but for the purposes of my observations in this paper I shall regard forest management as the use and application of technical knowledge towards some end.

It is this comprehensiveness of the subject which makes it unlike the sources of knowledge on which it is dependant. Management in this sense does not change while all the factors, considerations and techniques on which it is based are constantly changing. The policy may change but you cannot have management without policy and once the policy is fixed, management is the ordered systematic progress towards the end which the policy lays down. We must decide in the first place whether we want to go from Dublin to Boston or Bombay. When we have decided that, we must consider which is the quickest, cheapest and safest way to get there. In forestry we may have changes in thinning grades and intervals, we may have pathological dangers or disasters, we may have new ways of raising seedlings or planting or felling or conversion. Any of these may be exciting and greatly affect our actions as foresters, but the manager still continues in his role of using these changes. Whether he uses buffaloes or track vehicles, rivers or roads, aeroplanes or theodolites, 'C' grade or 'X' grade thinnings, he must plan towards an end. So while we must expect and encourage advances in every possible direction of our knowledge, biological and economic, we must be ready and able to use such knowledge sensibly and intelligently to get what we want to get.

Planning the Basis of Management.

It is fashionable to-day to talk about "planned management." This seems to me to amount to an example of grammatical redundancy for management, as I understand it, is planning.

We can compare the forest manager to the farm or factory manager and while there is much in common, there are obvious reasons why the man in charge of the forest factory has certain special and peculiar problems and difficulties.

I prefer to think of the forest manager rather as an architect who has to design a building for a particular purpose; it may be a cathedral or a block of flats, a warehouse or a school. He has a choice of materials and methods and he must consider costs. But his building, once finished, is complete and he uses dead materials in its construction. The forest designed by the forest architect is composed of living things, its form is constantly changing and ideally it is perpetual.

In some ways the role of the general fits better, for he has a set objective, he uses men, weapons and tools to reach his objectives and he must be ready to change his tactics or direction as the campaign develops. He may have to scrap old weapons for new, he must have originality and resource and freedom of action and he must be prepared to reach his objective in stages and eventually hold it.

None of these parallels is completely satisfactory in assessing the functions and duties of a forest management officer, but one thing is common to them all; each must have a plan.

I consider that some kind of plan is inseparable from the idea of management and I shall attempt to indicate the form of plan I think we need at present in British and Irish forest management, because it is this part of forest management which changes with circumstances and which indeed must be capable of change.

The Present Position regarding Forest Working Plans.

The arguments that have been put forward can be found in any textbook on forestry. Working plans have been in operation on the Continent for over a hundred years. The case for some kind of planning is constantly advocated by enlightened and thoughtful foresters. In a recent copy of your Society's journal, one of your members is reported as saying that "it is only by planning and foresight that the best results can be achieved." Yet the fact is that it is rare to find any kind of written operating Working Plan for any forest in the British Isles. As foresters on both sides of the Irish Sea, we have paid lip service only to this doctrine. In theory planning is indispensable, in practice it is virtually non-existent. Why is this? It is true that there have been active critics and opponents of working plans and some who even consider them a waste of time. Let us consider some of the reasons for this apparent inconsistency between theory and practice.

The reasons are not simple and involve a number of considerations.

First, working plans were developed in connection with European forest management. Over a considerable period of years they have assumed a somewhat stereotyped pattern and in their modern form

are often complicated and formidable documents. Furthermore, they apply almost invariably to well established forests, the boundaries of which have not altered for many years. They are often, as the result of past planning, now in a state approaching normality and yielding an outturn of mature timber. They are concerned chiefly with matters of yield calculation and regulation. The forests and the conditions appear so different from ours that such working plans seem quite unsuitable. With much of this I agree and I do not advocate that we should copy them in their present form, but I would remind you that the forests covered by these plans were not always so perfect and the present form of the plans is an example of the evolution of the form and pattern of working plans. Nor do I agree that we must wait until we have reached a comparable or even a productive stage before we make our own plans. We require our own kind of plan for our own conditions and stage of forestry. There has, I believe, been much confusion and misunderstanding in attempting to apply the results of nineteenth century Mid European forest management to our forests.

Another reason for the absence of working plans is the doubt and uncertainty regarding the future. While the European forests developed in an atmosphere of comparative peace and economic stability, we live in a time of changing values and standards. The very areas of our forests are not definite or fixed. New methods and techniques are being proposed, new implements invented. This is a temptation to vacillate and postpone action. I agree that it is much easier to make a plan when you can depend on markets and values and when you know exactly what you want, but I suggest that it is precisely in such a bewilderingly changeable and uncertain economic climate that work and action must be planned and assessed. Because a new weapon may be invented tomorrow is no excuse for not planning the battle and I might add that Ireland has never been short of good generals. Planning must make use of research but it must not wait for the results of research. Again as one of your members has remarked "we should have a long term plan, apply the methods which we consider most suitable; record our mistakes and successes so that our work will not be in vain."

Closely connected with the postponing of planning because of uncertainty is the temptation to succumb to an *ad hoc* type of planning. It is the argument which results in day to day decisions, almost invariably without any record being kept. Now it is certainly asking for trouble to try to plan too far ahead in forestry these days, but it is also asking for trouble to depend on snap decisions and constantly changing tactics. By the very nature of forest operations, unless they are planned in advance with care and the appointed time and place prescribed, there is more than a chance that essential operations are neglected, confusion is created and no way provided of knowing in the future what has been done. We may not be able to plan 20 or even 10 years ahead, but some interim objective must be set and the plan made to reach it. We

must think ahead in forestry; we must consider the position as it exists and the only satisfactory way of doing this is to have a written plan for a stated period with written records and systematic periodic reviews and revisions (4). The day to day method of working may seem attractive, but it inevitably amounts to having no plan at all.

I cannot omit from this analysis of the reasons for the virtual non existence of working plans, the formidable nature of the work, because the preparation of even the simplest plan of any use involves much work. I am quite sure that the writing of plans has often been neglected for this reason but, like so many other things, the task does not get any easier by postponing action. I fear too that a lack of knowledge about the method and manner of compiling a working plan may sometimes be a still further explanation for lack of action.

Special reasons for urgency in the preparation of Plans.

Much that I have already said is an argument not only for the preparation of written working plans, but for the urgent and pressing need for them. There are several reasons why this is a matter which we can ill afford to delay. Practically all our forests are young. Many of them have been created on sites which were previously treeless. Here is a very great difference between our forest management and that of many other countries. It, however, presents a challenge and an opportunity. Both by planning the establishment and by recording the steps taken from the very beginning, it is possible to obtain a unique record. If this opportunity is lost it will mean that vitally important evidence will be missing when eventually the time comes to pass judgment on results. Such formative forestry may have its particular problems and uncertainties, but it has special advantages also if they are taken. The very uncertainty about the ultimate results of many of our actions makes it doubly necessary to state what is to be done and what has been done. Only then can we profit by mistakes and improve on methods. Some of our forests are already beyond the embryonic state and in the stage where yields in the form of thinnings are being produced. Soon this will assume much larger proportions. The need for a thinning plan for each forest is a matter of great urgency. As we know there are different ways of thinning the same species and different species will need different methods, are we to wait until we have satisfied ourselves about the results of various thinning methods before we make a plan? It will be necessary to decide now how we are going to thin any particular stand and when it is to be thinned. This should be clearly set forth for a stipulated period and adhered to. It is not a waste of time making working plans—it is a terrible waste of time not making them.

Functions of the Modern Plan.

So far I have attempted to explain the absence of working plans and to indicate the need to correct this state of affairs without delay. It will be clear from what has been said that the value of these plans is not only to assure that various operations are performed but to supply a record of the results. I consider that both these functions are exceedingly important.

I am well aware that the conception of normality or perfection and the ideal of a sustained output or maximum benefit should always be in the mind of the forest manager, but I would dare to suggest that for any one forest these things need not, at the present, submerge more immediate objectives of management (1). Indeed, in many cases the unit for sustained yield management is not known, the most desirable age or size for felling is in doubt, and even silvicultural systems are uncertain. Much has to be done before these questions become acute and indeed it is on the results of our methods and treatments that they will ultimately have to be decided. There is no need to disguise the fact that most of our forestry will for some time to come have to be a matter of trial and error and the only way we will progress towards greater perfection is by having a plan of action and an assessment of results. In forestry as in other occupations we have to examine ourselves. Every one of our forests should be in a sense an experimental area. The Swiss have shown us the value of a system of decision, and checking of results and redecision in the light of these results. How many cases do we know in these islands where we can go into a stand and obtain a complete record of what has happened there from the time the stand was established? It is the importance of factual evidence by repeated and systematic inventories, measurements and assessments which I particularly stress as the most desirable function of the plan. And it need not be imagined that this can be done without a plan. Each step must be planned with intention and only then will the record be systematic, continuous and complete. The State forests have here a great advantage over most private forestry for more often than not they have the chance to know the story from beginning to end. It need hardly be mentioned that this checking of results will not be confined to volumes and heights, diameters and numbers of stems, but should include costs and receipts.

One word more; it is by such a system of planning, step by step from the beginning, that flexibility and freedom of manoeuvre, so essential to good forest management, can be achieved. We are far too prone to forget that in forestry we are dealing with living things. Trees cannot be bullied into behaving as we want them to and indeed our influence upon them is very limited. If we are to get to know our forests and our trees really intimately, which is the real secret of success, then it is only by visiting them regularly and examining them and describing them that we can hope to do this (5).

The Form of the Plan.

While few will seriously criticise the principle of planning in forestry, there is considerable difference of opinion regarding the pattern or design which the present day forest working plan should take. This is a big subject and it is not possible in this paper to treat it as completely or competently as it deserves. Indeed the only satisfactory way to discuss the form of the plan is by demonstrations and examples. I will not, however, weary you with detail but confine myself to general conclusions which I have reached in the course of my study of this extremely interesting subject.

First of all, let me make it quite clear that what I have in mind is a written document which will cover a chosen period of years and become a permanent record. I envisage a form of plan which is well within the capacity of any well trained forest officer to compile. But I must say that the writing of working plans requires skill and this can rarely be achieved without practice.

Secondly, I am particularly thinking of the form of plan most suitable for State owned forests in their present state of development, and in that connection I do not consider that the so called Plan of Operations as proposed by the British Forestry Commission provides a satisfactory model for our purpose. It must be remembered that this document was designed for private estates participating in the dedication scheme and in that connection it is very sensible and practical. (6).

I think that for the proper management of State forests a considerably more complete and detailed form of plan is desirable, but, of course, the pattern will have to be worked out by the State service and all I will attempt to do is to make some suggestions. I strongly advise that very careful thought be given to the design of the framework, the kind of information to be collected and the way in which it is to be entered and presented before a final official form is laid down. In devising this I advise that a standard official form suitable for all State forests is preferable to different forms for different forests and consequently the selected pattern should be applicable to all conditions and variations. The use of a standard pattern greatly simplifies administration control and makes the necessary periodic revisions much easier.

The general division of working plans into three main parts dealing with the facts, the prescriptions and the records is so well known that I will assume this arrangement and headings for chapters and sections need not be detailed. Examples can be found in various textbooks (2) (3). In connection with what I have said earlier I place special importance on certain documents and features of the plan and I will confine myself to brief comment upon these.

First of all, I consider that a complete history of the area covered by the plan is exceedingly important. This is rarely given the attention it deserves. Such a record should contain all that is known about the

past ownership, management and administration. The importance of this section of part one of the plan is that in most State forests much valuable historical information is available, once compiled the record is complete, and if it is not done as soon after acquisition as possible, very important basic knowledge will be lost.

Next I place the greatest possible emphasis on the preparation of the Stock map. This is a document of paramount importance. I could well devote all my time to this item alone. Suffice it to say that in my experience a scale of six inches to the mile is a very satisfactory one for this purpose and the ordnance survey sheets are an excellent basis. It is absolutely essential that the stock map should be as complete as possible. It should show all change of age within, at least, ten year classes, and any change of species or mixture, using the unit of one acre as the lowest unit to be separately mapped. Of course, in the case of new forests, if the limits of any one year's planting are known it is desirable to indicate these. The system of symbols and colour scheme to show variations of age and species is a matter for very careful decision, the important thing is to have a general official system so that all government stock maps are prepared on exactly the same pattern. It is quite impossible to over emphasise the importance of this document and it deserves very great care in preparation.

Along with the stock map must be prepared the full description of each compartment or sub-compartment. In fact these two documents go together. The headings for the forms which contain the factual data regarding all that is shown on the map are the most difficult details, in my opinion, to decide. They must not be so elaborate as to be impracticable and yet they must contain enough information to fulfil the purpose of improving management. A pattern which I have found very satisfactory in practice is available for inspection but I suggest that a standard form of headings should be evolved by the State forest service. The programme of work under various headings of operations must be set forth. Again it is not possible to go into details, but a specimen form is submitted. On the whole, I am inclined to favour a five year programme for State forests. Especially with forests in their formative stage it is difficult to plan much further ahead and with a State service the question of revisions, as subsequent plans are called, should not present a serious obstacle. Prescriptions, no matter how carefully considered, will almost certainly have to be modified and it is most unwise to try to look too far ahead. However, a programme must be set with every intention that it is carried out.

This leads to the next feature of the design which I want to mention specially, namely the record of work done. This is the really pressing need in all State forests as I have tried to show earlier. The all-important thing is to see that everything that is done in the working plan area is put on record and the cost entered. The unit for record should be the compartment, but if sub-compartments are shown in the

stock map, these must have their separate case history. This is the real balance sheet of the forest and it is this feature which I consider must be an essential part of the working plan which we need at our present stage of development in forest management.

It might appear that I have so stressed the value and importance of records that these are indeed all that is needed, that all that is necessary is a careful diary of events or methodical log book. This is not my contention. The record must be, and indeed in practice only can be, of value if it is the record of the results of a prearranged scheme, plan, course or strategy. We as foresters must be architects and not jobbers.

Conclusions and Implications.

Having indicated, very superficially I fear, the general form our much needed plans for management should take, let us in conclusion glance briefly at what this involves.

We must see that forest officers are properly and thoroughly trained to prepare working plans. This in turn means an appreciation of careful and accurate work, lucid expression and good presentation. As a teacher of forestry I am constantly astonished and distressed at the inaptitude of students in draughtsmanship and their indifference to the value of really neat and well finished work. They have a great deal to learn from our continental forester friends in this respect. In our admiration of European forests and the silvicultural skill they reflect, we, too often, overlook, or are ignorant of, the efficiently constructed and beautifully executed plans and maps and records which have played no small part in the product of management which we admire.

I consider it desirable that the working plan for a forest should be written by the officer who is in charge of the forest, rather than that there should be a central and detached working plans branch of the service. There will have to be direction from above regarding the manner in which information is recorded, the standardisation of forms and tables, colour schemes for stock mapping and the system of costing, but I advocate the compilation of the plan by the officer who will be responsible for carrying it out. This, in turn would indicate a policy which avoids frequent movements and transfers of forest officers.

A good working plan can only be written by one who thoroughly knows his forest and, as sustained effort and continuous recording are such essential elements in good planning, it is of great importance that the writing of the plan should be entrusted to the right man. It is nothing short of tragic to have a good start made and not maintained.

The making of forest working plans is not easy; it involves intelligent sampling and much measurement; it requires the ability to compare results and form judgments and it takes time. But there is nothing about it which is impossible or impracticable.

The possession of a working plan will not, in itself, mean good

management but good management is impossible without a good plan. State forestry in Great Britain and Ireland is sadly in need of plans of management and Irish forestry has a great opportunity to lead the way.

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COVER PHOTOGRAPH

Our cover photograph shows in the right foreground a "plus" Scots Pine tree which stands on the Coolattin estate, Co. Wicklow.

The total height of the tree is 90 feet and the Q.G.B.H. is 34 ins. The stem is straight, circular and free from branches to a height of 46 feet.

Site vegetation comprises Bracken (*Pteris aquilina*), Woodrush (*Luzula maxima*) and Bilberry (*Vaccinium myrtillus*).

See report on excursion to Coolattin estate.

NOTE ON THE PERFORMANCE OF SITKA SPRUCE ON A DEEP PEAT.

By P. J. WHITE

IRISH foresters are aware of the comparatively large areas of peat soils that are being acquired by the Forestry Division for planting purposes and they are conscious of the lack of experience in the afforestation of such soil types.

They are also aware of the fact that sitka spruce is now the most widely planted tree in the Division's programmes and that much of the planting of this species is being carried out on peat sites.

It is presumed, therefore, that observations on the results of the planting of sitka spruce on peat in the early part of this century would be of value.

The subject of this note is a small stand of sitka spruce growing on a sheltered and reasonably fertile peat in compartment 9, Raheen property, Tuamgraney State forest, Co. Clare.

Located on the west side of Lough Derg, the most southerly of the river Shannon lakes, the area has a south-easterly aspect and is well sheltered from westerly winds. The elevation ranges from 110 to 120 feet above sea level.

Rainfall in the locality in 1912 was 44.98 inches; 1952, 36.96 inches and 1954, 54.33 inches. On three occasions in the past 40 years the rainfall has exceeded 60 inches.

Before acquisition the tenants on the Raheen estate cut turf for domestic use on the area; remains of turf banks are still to be seen. The depth of peat varies from $1\frac{1}{2}$ to 2 feet on the west side of the block to an ascertained 12 feet on the eastern edge; in some cases the depth of peat is as much as 20 feet.

In 1912 when the particular block was planted the ground was covered by a growth of natural birch with some bramble (*Rubus fruticosus*) and bracken (*Pteris aquilina*). At that time the area was protected by a deer fence as deer were then plentiful in the district; there is not one to be seen to-day, however.

Prior to the erection of the hydro-electric station further down the river at Ardnacrusha in 1930 it was usual to have rather high winter floods. At present, however, there is little variation between winter and summer levels. On May 1st, 1956 the water table was 15 inches below the surface of the forest floor.

The original selection of species comprised sitka spruce and *Thuja plicata* in a 50/50 mixture at an espacement of 4 feet by 4. It may be of interest to note that from this selection it was hoped to produce a final crop of *Thuja*. Things did not work out as planned, however, and, to-day, there is a reasonably uniform stand of sitka spruce with some 65 small *Thuja* coming at a much lower level.

From the information available it appears that the plantation escaped frost and insect damage in the early years.

At the beginning the rate of growth was rapid—annual rings one to one-and-a-half per inch as can be seen in felled butts. This rapid diameter growth was arrested after the 25th year or so when competition became more keen and the number of rings increased gradually to 8 to 10 per inch. Growth rate was soon stepped up however by the opening of the stand in the course of thinning.

Full records of thinning are not available. The stand was thinned in the early and late 1930's, again about 1942, in 1949 and 1956. Figures for the 1956 thinning are given below together with other data concerning the yield.

The crop is at present growing vigorously and much can still be done for it through attention to thinning. Main leader growth in 1954 averaged 23 inches and in 1955, 20 inches.

The writer is indebted to Dr. E. McLysaght, Raheen Manor for much of the information made available in this note.

SOME DATA ON STAND

Area Acres	Age Years	Number of Stems	B.H.Q.G. of average stem. inches	Height to tip of average stem. feet	Height to 3 inches diameter of average stem. feet
$1\frac{1}{2}$	45	268	$11\frac{3}{4}$	87	72
Q.G. of average stem at 36 feet. inches		Volume of average stem. Hoppus feet		Volume of stand. Hoppus feet	B.H.Q.G. of largest stem. inches
9		40.51		10,856	21

PER ACRE		THINNINGS, 1956	
Number of stems	Volume. Hoppus feet	Number of stems	Volume. Hoppus feet
198	7,237	85	1,700

NOTE ON THE RAISING OF BIRCH FROM SEED IN THE NURSERY.

By P. FINNERTY

THE birch is the "dainty lady of the woods" to the landscape gardener and the parkland forester but is usually the weed of the woods to the forester engaged in the replanting of cut-away woodland areas. To the forester concerned with the afforestation of bare but fairly fertile areas birch makes no appeal, possibly because plants of this species are seldom available but more likely because he sees no future in birch as against the many other species at his disposal for his main crop or as nurse species. To the forester charged with the planting of exposed infertile areas, however, birch must be a welcome addition to the very limited number of species which he can use with any hope of success. And surely he can hope for success with birch, the species that survives in the subarctic.

Birch is a useful tree on bare and poor areas because once established it regenerates freely. Planted through conifers it should help to check the spread of insects and disease. It will be used then in shelter-belts and in strips and groups for breaking up blocks of pine and spruce.

From the economic viewpoint the uses of birch may be limited but their importance might become worthwhile if enough of the mature timber became available, for example for the manufacture of plywood. Birch makes an excellent fuel and all who experienced the rigours of the fuel shortage of 1947 would agree that the building up of a strategic reserve of good firewood would be a desirable step.

Perhaps the greatest reason why birch has not been more widely used is that it is, or perhaps has been, difficult to raise from seed in the nursery. I deliberately use the words "has been" because over the past three years at Monaghan nursery it has presented no more difficulty than any other broadleaved species. In fact it presented less difficulties because the seed was not attractive to rodents.

The time of collection, storage and treatment of seed, time and method of sowing and subsequent treatment of seedlings are as follows:—

The seed is collected during dry weather in September. It is stored in a dry place up to the first week of February, then it is mixed with fine moist sand and kept damp until about mid May. It is then sown broadcast in 4 ft. beds. The beds are prepared in the usual way, they are not brought to as fine a tilth as for sitka spruce and contorta pine. A liberal covering of seed is then laid on and is lightly rolled into the beds. No soil covering of any kind is used. Immediately the beds are rolled they are covered with branches (sitka spruce and douglas branches because they are available). The beds are then kept watered, the seed being kept continuously damp until germination takes place.

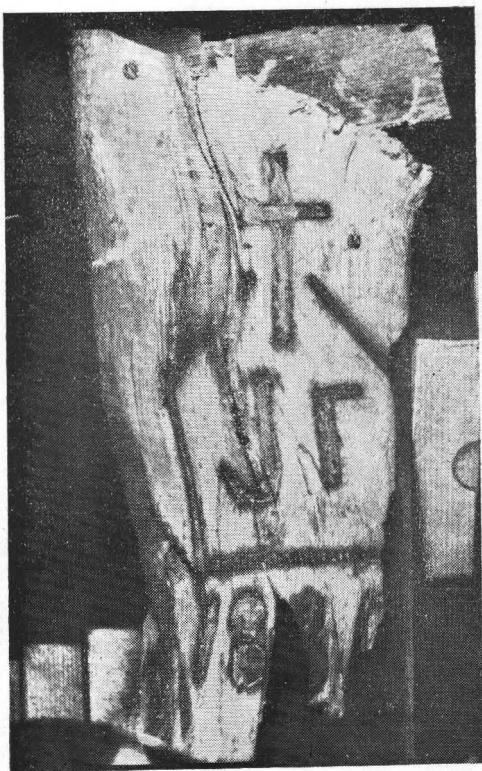
This is not such a hard task as it might seem as the branches shade the beds and protect the surface from drying winds. The branches also save the beds from "washing" during the application of the water. Watering goes on usually into the third week after sowing. It has never been abruptly discontinued but has been broken off during a spell of damp weather. The branches are retained after the first and second weeding, being removed and replaced as weeding progresses. They are removed during damp or cloudy weather when the seedlings are established and are replaced on the beds in November and retained until the seedlings are lifted for lining-out.

It has been observed that the best seedlings were obtained from the richest ground. Ground which gave an excellent crop of sitka and norway spruce seedlings did not seem to be too fertile or even fertile enough for birch.

A CURIOUS FIND.

(Note supplied by Professor J. Bayley Butler, M.B.E., M.A., M.B., B.Ch., B.A.O., M.R.I.A.)

In 1945 when I was treating Enniscorthy Mental Hospital for dry rot, the then Resident Medical Superintendent, Dr. M. B. O'Higgins, was kind enough to give me an interesting specimen of a block cut from a Beech tree for fire-wood. By a curious accident the axe used for splitting the wood happened to split a cleavage plane on which an inscription had been cut. This consisted of a diagram of, apparently, a Church showing the gable-end of the roof. Above this was a cross and within the drawing were the letters "J.F." Underneath the figure, the date 1881 was clearly legible. The strange part of the incident was that the outer portion of the stem which had been separated by the split, showed identical marking in reverse, or mirror image. It was clear that this inscription had been made on the date in question and whether it had been cut through the bark and burned, or whether some black tarring material had been used for marking the letters I have not been able to find out. Part of the original markings are distinctly visible, persisting on the *external surface of the bark*, but they are not as clear as the original inscription. There were 39 annual rings between the site of the inscription and the bark, so that the tree would appear to have been felled in or about 1920.



The photograph sent herewith illustrates the inner side of the log. I have both specimens in my Museum and would be glad to show them to anyone interested, or to have any explanation as to how the inscription persisted in the bark.

J. BAYLEY BUTLER.

81, Ranelagh Road,

Dublin.

1st May, 1956.

FOURTEENTH ANNUAL GENERAL MEETING

THE fourteenth Annual General Meeting of the Society was held in the Shelbourne Hotel, Dublin on Saturday, 24th March, 1956, up to sixty persons being present.

The retiring President, Mr. T. McEvoy, opened the meeting. The minutes of the previous Annual General Meeting, having appeared in *Irish Forestry*, were taken as read, confirmed and signed.

Mr. McEvoy then called on the Secretary to read the Council's Report for 1955.

COUNCIL'S REPORT FOR 1955

THE new Council met on Monday, 24th January, 12 members were present. This meeting made arrangements for the Annual General Meeting, elected committees to deal with the Journal, Excursions and Finance. A programme of local excursions was arranged and proposals for a General Excursion to the West of Ireland outlined.

The Council met again on the 18th March. Arrangements for the reception of Mr. Hiley were made and included a visit to plantations in Co. Wicklow. A special Committee was set up to enquire into the membership position with special reference to grading and rates of subscriptions. Dates were fixed for day visits to Baunreagh, Ballycurry, Castlepollard, Inistioge.

The Council met again on May 2nd. The main business was concerned with arrangements for the Annual Excursion to Galway and the summer programme.

The Council met on November 24th. Arrangements were made for the Election of New Council and also for the Annual General Meeting for 1956. Also considered was the venue for the Annual Study Tour.

A Council Meeting was held on December 12th. The main business was the Report of The Membership Committee. A lengthy discussion on this report took place and the meeting adjourned at a late hour. The adjourned meeting was resumed on December 19th. The meeting appointed scrutineers to open and count the Voting Papers for the New Council and make provision for the publishing of Vol. XII, No. 2 of the Journal. Recommendations were made dealing with membership, the publication of the Journal and the holding of Excursions.

MEMBERSHIP.

At the end of 1955, paid up members numbered, 45 Grade I, 55 Grade II and 93 Associate members. Income from subscriptions amounted to £172 5s. 0d. as compared to £178 5s. 0d. in 1954, a

decrease of £6. The Council devoted a very considerable portion of its time to a discussion on the membership position which cannot be said to be satisfactory.

JOURNAL.

Two issues of the Journal appeared during the year under review. The difficulty of securing adequate suitable material from home sources has been discussed at various meetings of the Council.

EXCURSIONS.

The full programme of Excursions in 1955 is recorded in Vol. XII, No. 2 of *Irish Forestry*.

The adoption of the Report and Financial Statement was moved by Mr. J. C. Kearney, seconded by Mr. B. Maloney and carried unanimously.

The retiring President then delivered his valedictory address.

PRESIDENT'S ADDRESS

AT annual general meetings it is customary to review forestry developments during the year.

General World Literature :

Since World War II F.A.O. has assumed responsibility for international forestry statistics. In 1955 that organisation published what amounted to the most detailed and accurate survey of forestry resources so far. Even so it is recognised that much remains to be done before a really comprehensive and reliable picture of world forestry is available. However, the survey is of great interest and I propose to quote some salient figures.

- (a) The Earth's surface is divided into 30% forest (one half inaccessible); 23% agriculture; 47% waste.
- (b) There are 4 acres of forest per head but only $1\frac{1}{4}$ acres per head in use; $\frac{3}{4}$ acre per head in Europe; $1/10$ of an acre per head in Eire.
- (c) 22% of the world's forests are privately owned; over half of Europe's forests are privately owned.
- (d) Only one-third of North America's forests are being exploited. Canada has 150 million acres of accessible unexploited forest!—five times the size of Ireland.
- (e) Percentages of forest in use worked according to *working plan*: Europe 42; Canada 54; World 27.
- (f) The *average stocking* is under 1,000 hoppus feet per acre.
- (g) The *increment* is under 30 hoppus feet per acre for Europe—highest reliable figure.

- (b) Half of the world's wood supply is used as fuel: 40% in Europe and the U.S.S.R.; 90% in Africa.
- (c) Finally it seems that an impressive effort has been made in afforesting bare land in the six years 1947-53, *6½ million acres having been planted*. In the same period, however, over 60 million acres have been de-forested notably in rapidly developing countries such as Nigeria and Indonesia.
Conclusion: Theoretically world forests are capable of meeting greatly expanded demands but skilled management is essential.

Forest Products—World Market Trends, 1955.

The market was firm and steady with tendency to rise especially in pulp and newsprint lines towards the end of the year. Saw-timber consumption remained static but there was a marked increase in pulp and fibre-board. Saw-timber accounts for some two-thirds of commercial output; it is interesting to note that the Irish consumption pattern is similar.

Silvicultural Developments :

It is impossible to cover so vast a field fully but a few points strike me as having some significance for Ireland.

(a) Use of selective weed killers to control hardwood scrub choking planted conifers—American development; experimental control of furze at Johnstown Castle, Co. Wexford as reported in our journal. These open up great possibilities of economies against rising labour costs.

(b) Anderson and Fairburn of Edinburgh studying climatic zones in relation to forestry in Scotland. This type of study has for long been the basis of work on peat afforestation in Sweden and undoubtedly it will be necessary in Ireland to relate silvicultural practice to climatic zones.

(c) American research workers have tested the effectiveness of shelter belts by use of scale models in wind tunnels with very interesting results which accord well with full scale tests.

Home Market :

This was steady with an increasing demand for oak, ash and beech. There was continued improvement in the equipment and efficiency of the timber conversion industry. During the year we heard at meetings of the Society of plans for doubling the output of wallboard and for the establishment of a wood pulp and newsprint industry based on Irish timber. It is gratifying to note that Irish exports of paper and cardboard amount to £2½ million pounds per annum and that wall-board exports account for £¼ million. The value of wallboard works out at about £50 per ton—the produce of thinning one acre may in

terms of export values be £200 although the value of standing timber may be only £10-£20.

It is important to realize the major change in the pattern of the native timber trade in recent years. Half the commercial market is now supplied by small-dimension timber from the young plantations and this accounts for the bulk of the income of over £200,000 of the Forestry Division this year. Its value *standing* is low but its value in terms of industrial processing can be immense.

Thinning in state forests is now in the region of 10,000 acres per year. *New planting* this year is 15,000 acres. Expenditure is £1½ million and employment is 5,000.

Private Forestry :

The satisfactory market for timber over a period has induced a very welcome recovery in private forestry in Ireland and it is gratifying to note that many private estates are now rehabilitating their woodlands on commercial lines and employing professional forestry consultants and adopting *working plans*. Members will recollect several instances from the Society's excursion programme.

Technical Development at Home :

In nursery practice excellent results have been obtained from the use of new soil insecticides and weed-killers. Output of fit plants per lb. of seed has increased substantially and significant reduction in costs of plants has been effected.

In planting the use of mechanical ground preparation and phosphatic fertilizers has resulted in a wider use of sitka spruce in substitution for contorta pine especially on poor western peatland. Though the former has emerged as the most important species in Irish afforestation several new reports of *group dieback* have been rather disquieting.

Finally we come to the old familiar bottleneck of *land acquisition*. Concentration on western areas has brought the problem of *defective titles and commonage acquisition difficulties* into increasing prominence. It is hoped that the new Forestry Act will provide adequate machinery to overcome these twin obstacles and so hasten the fulfilment of the Forestry Programme.

The retiring President then announced the names of the office-bearers and councillors for the year 1956 and declared them duly elected. The list appears on page 2 of this issue.

He expressed his thanks to all those who served on the Council during his two years as President and who co-operated so wholeheartedly in furthering the aims of the Society. He stated that it would be invidious to single out individuals but that he could not let the occasion pass without special reference to the indefatigable work of

Mr. Clear as Secretary, Mr. Swan as Editor and Mr. Mooney as Vice-President. He had the greatest confidence he said that Mr. Mooney would adorn the office of President in this the year of our first continental study tour and that the Society would go from strength to strength under his wise guidance.

He then invited the new President, Mr. Mooney, to take the chair.

The new President in taking the chair expressed his appreciation of the honour the Society had conferred on him in electing him to that office. In paying a tribute to his predecessor he said that a measure of members' high regard for Mr. McEvoy was the fact that they had elected him President of the Society for four years and that he had been Editor of the Journal for a further four years; he had made many valuable contributions to the Journal and had given generously of his time and ability to the general organizational work of the Society. He said that he regretted that his first duty was to refer to the recent death of one of the most distinguished members of the Society, Mrs. Augustine Henry. In paying a tribute to her memory he said that her passing severed a direct link with Professor Henry, an Irishman who attained international fame as a forester, botanist and plant breeder in the late years of the nineteenth and the first quarter of the present century.

The President then announced that in addition to the five-day study tour in southern Germany arranged to take place at the end of May and the beginning of June the Council had planned afternoon study tours at Coolattin, Co. Wicklow; Lough Eske, Co. Donegal; Mallow, Co. Cork; Kinnitty, Co. Offaly; Rathdrum, Co. Wicklow and the Clondalkin Paper Mills, Co. Dublin.

The private business of the meeting having been concluded there was a short interval after which the President introduced Mr. W. M. McNeill, Lecturer in Forestry, University of Aberdeen, and called on him to read his paper on "The Application of the Working Plan in Forest Management," the text of which appears elsewhere in this issue.

DISCUSSION ON Mr. McNEILL'S PAPER

Mr. F. G. Burgess, Deputy Chief Technical Officer, Ministry of Agriculture, Northern Ireland, in proposing the vote of thanks said: I do not think that I can use a better preface to my talk to-night than to quote the words used by Mr. W. E. Hiley in his Presidential Address to the Society of Foresters of Great Britain on 18th May, 1955. He said "Present day forestry is likely to prove much less productive than it should be because we, in our generation, are neglecting some of the major problems of forest management, and are taking insufficient care to ensure that the techniques which we employ are appropriate to the country's needs. We spend large sums of money establishing forests but are neglecting many of the measures which ensure that the forest wealth we create shall be as large and as useful as we can make it."

We, as members of the Society of Irish Foresters, pride ourselves on being trained foresters and we must lead in constructing a well-informed opinion on technical matters. If any change is required in the orientation of our ideas, this Society is the body through which such a change should be inspired. The question of management, as laid down in working plans—if they exist—or otherwise, as laid down in various short term plans covering such items as planting, thinning, road making, fire protection, etc., etc., is often neglected as being a matter for the future, the attitude being "Let us first grow our trees, and then see how the timber from those trees can best be used"—an attitude which is opposed to all the principles of good management. Surely it is better to find out first the use to which the timber is to be put and then grow timber which will meet the consumers' needs in the most economical way, by means of carefully prepared working plans. Mr. McNeill in his excellent paper read to us to-night has given us the principles of Forest Management based on working plans, and I hope now to show how those principles are applied in the actual compilation of working plans both in the past and in the present.

During the period 1925-27 and again in 1936, I was fortunate enough to be on special duty for the purpose of preparing working plans for two large districts in Burma where the objects of management were fairly simple and straightforward, namely, to convert large tracts of almost virgin forests into what is known as normal forests, in order to ensure a sustained yield of the major species which it was economical to exploit. The working plan was, therefore, comparatively simple, and not complicated by planting, thinning, road, fire protection and various other plans. It consisted of the usually accepted two parts, Part I, being a summary of facts on which the proposals were based, or, in other words, past history, and Part II, the actual proposals for management over a period of at least 10 years.

The conditions, however, which exist in a country where the forests, as it were, are ready made, are not the same in a country such as ours

where forests, in most cases, have to be created, or where forests do exist have not yet reached the stage of full production. Working plans under such conditions are of necessity much more complicated and, in my opinion, are essential if we are to ensure, as Mr. Hiley has said, that the forest wealth we create shall be as large and as useful as we can make it. I am very happy to say that the Forestry Division to which I have the honour to belong has now made a start in the preparation of working plans for all forests it controls, and one plan has already been completed. The organisation for the preparation of working plans is controlled by a team consisting of a Scotsman, an Englishman and another Englishman trained at a Welsh University, who have pooled their experience and training, and the field work is carried out by an Irishman from a University in your own fair city of Dublin and trained by the Secretary and Treasurer of this Society, Mr. Clear.

Owing to the complicated nature of working plans which are so necessary for the type of forests with which we have to deal, and to the rapidly changing conditions of the times in which we live, it has been found necessary to depart somewhat from the usually accepted type of plan and to introduce a type of plan more in line with modern ideas. Our working plan consists of three parts, Part I, as in older plans, being a Summary of Facts on which the proposals are based and consisting of 5 chapters; Part II, consisting of 19 chapters, contains all the Long Term Management Proposals in general terms, whilst Part III, with the same chapter headings as in Part II, is the Five Year Plan in detail and not ten years as in most of the older plans. Part I, of course, remains unchanged throughout the life of the forest, and Part II will also remain unchanged for a considerable time, although it is liable to revision if and when conditions arise involving a change of policy. Part III will need a revision every 5 years, or even sooner, according to the progress made, or to meet unforeseen circumstances.

Each plan will also have eight control forms as an appendix, and six maps.

Mr. McNeill has said, and rightly so, that, in theory, planning is indispensable, but in practice it is virtually non-existent. I quite agree, but I have tried to show that we foresters do realise the necessity and urgency of planned management, and although it has taken some years to make a start, I can assure you that it has not been through lack of enthusiasm, but simply a lack of trained staff. Mr. McNeill has presented to you the formidable nature of the work involved, and has stated that the absence of working plans is often due to doubt and uncertainty of the future. Doubt and uncertainty there will always be, but this must not be allowed to delay the planned management which is so essential, if we are to be worthy of our profession, and pass on to our successors the benefits of our training and experience.

I would now like to mention one of the most important factors affecting management, which has given rise to quite a lot of controversy,

and that is, the thinning of plantations. As you know, the present authoritative guide is the 1951 edition of the Forestry Commission's pamphlet entitled "The Thinning of Plantations". The grades recommended in that pamphlet are used as a basis for the revised yield tables, but if we follow those grades, the trees of most species will grow in diameter very slowly during their later years, and will take an unnecessarily long time to reach saw timber size. On the other hand, if we thin heavily, trees will reach any desired size much more quickly, and I do not see how any one can know how to thin plantations until it is known what kind of timber is wanted. Fortunately, in my service, we have sufficient knowledge of the kind of timber required to enable us to fix a rotation for spruce—which comprises about 80% of our forests—of 45 years, and other conifers, of 60 years. It is proposed to carry out a first thinning at 15 years, followed by two more thinnings at three year intervals, and three more at intervals of 6 years, the final one being at the age of 39 years. The final crop will be approximately 150 trees per acre. Obviously, every different forest area will require some modifications, but the general principles are as described, and will only vary in detail. A few sample plots to ascertain rates of growth have been in operation since 1940 and during the last few years about 100 have been established, and we consider that we have sufficient evidence to justify the introduction of a 45 year rotation for spruce, bearing in mind the type of timber which is in the greatest demand.

Finally, a word about maps. The importance of aerial survey cannot be too strongly emphasised in the preparation of accurate stock maps. The study of such maps, combined with inspections by the field staff, produce accurate stock maps on which all other maps depend. From our experience, it has been found that a number of maps traced from Ordnance Survey sheets and copied by the *dye-line* method are much to be preferred to one or two Ordnance Survey maps, on which is usually entered too much detail. This enables all the maps, which are so necessary to a working plan, to be easily read and understood, and is a more economical method than using the large Ordnance Survey maps in their entirety.

In conclusion, I would like to stress the importance of maintaining complete and accurate records of all matters affecting forestry operations, from the moment of acquisition, until the time when such information can be embodied in Part I of a working plan, and that every forest unit should have a working plan even before work at the unit starts.

Major F. W. Doyne, agent to the Coolattin Estate Co. in seconding said :

When I was asked to talk to you about the problems of afforestation on the private estate it was easy for me to agree as I knew I would not lack material. I am, however, going to confine myself mainly to the financial aspect, which is to my mind the whole crux of the matter.

For our purpose, private estates may be divided into three—those which are solely managed by the owner, those which are managed for the owner by a land agent, and the larger estates which have both an agent and a qualified forester. The first two have special difficulties as they are not large enough to afford a permanent forestry staff, and the employees that are available are responsible for a large amount of unproductive work such as maintaining estate roads, pleasure grounds, etc. The Coolattin Estate, for which I am agent, can be considered in the second class, consisting of some 5,000 acres, 2,500 of which are devoted to forestry. We also have a modern sawmill equipped with two $4\frac{1}{2}$ " bandsaws, which converts all our matured timber, none being sold in the round. The usual estate nursery has been dispensed with, chiefly because of labour difficulties, and it is found that it pays us to purchase seedlings and line them out in clean ground.

I would explain here that a land agent is a jack-of-all-trades, and one of the subjects he has to undertake is forestry, but naturally he has not got the knowledge of a trained forester, and of course on some estates the owner knows little or nothing about forestry. Where both the owner and the agent are keen and realise the financial advantages of good afforestation, the industry flourishes. I am happy to say that on the estate that I manage the owner is extremely keen, and I obtain all the assistance and encouragement required. I can tell you that but for the foresight of the previous owners in carrying out an extensive planting programme, it would have been almost impossible to keep the estate intact, for things were extremely difficult after the last war. However, the pitprop trade at that time was good, and thinnings produced a very good return, something over £5 per ton loaded on lorries being obtained.

I quite agree with Mr. McNeill that it is essential to have a working plan, and we have commenced to collect the necessary information and prepare stock maps. To assist us in this matter we have had aerial photographs taken which have been of great assistance. It will of course take a considerable time before our plan is complete, but we have at least made a start. It is, however, difficult to plan without freedom of action, and in this connection I would urge the Government to relieve private woodlands from all restrictions. After all, the trees which we are now harvesting were planted without any assistance whatsoever from previous Governments, and it seems most unfair that we should be directed as to what we can and cannot do.

I would now turn to various outlets for home grown timber, and so far as we are concerned the main items are pitwood and pitprops, thinnings for wallboard factories, and sawn timber. As I previously mentioned, the pitwood trade, that is unpeeled poles, was encouraging after the war, when sizes of up to 12" diameter were permitted to be exported, but when the exportable size was reduced to 8" trade completely collapsed. This resulted in the woods being unthinned and

suffering in consequence. The pitprop trade, that is peeled poles, appears to be taking the place of pitwood, but so far as I can see the price compared to the latter is not encouraging. The price offered by the agents in Cardiff for pitwood is £5 17s. 6d. per ton loaded on truck, and it is reckoned that after deducting expenses the net return amounts to £1 18s. 0d. The price for pitprops per Gothenburg Scale Standard of 180 cu. ft. is 490/- or approximately £10 5s. 0d. a ton, but in comparing this price with that obtained for pitwood it must be realised that in peeling the props there is a loss in weight of 50%. It must be further realised that the same tonnage cannot be carried either by lorry or by ship and the rates for freight are accordingly increased. There is also the cost of peeling to be taken into account. I reckon that the net return on peeled pitprops is £1 16s. 0d. Before leaving the subject of pitwood, I would like to tell you that I paid a visit to Cardiff at the end of last year and met one of the agents who negotiates the price for this timber with the National Coal Board, and he told me quite frankly that the supply from this country was far from satisfactory both in quality and completion of contracts. It appears to me that this has largely come about by timber being purchased by inexperienced exporters. I would therefore suggest that it would be to everybody's advantage if firstly, a price was negotiated at Government level with the National Coal Board, and secondly that only approved exporters be permitted to ship timber abroad.

Thinnings for wallboard factories are of course inferior to that sold for pitprops; the price is consequently lower. There is another difficulty here for the estate in so much as it is far from easy to obtain orders for small lots. I can quite see that it is essential for the factories to have regular supplies, and that they must buy in big quantities, possibly through contractors, but it would be helpful if they could arrange to take small quantities direct from the private grower.

So far as sawn timber is concerned, it is interesting to note that since wallboard and paper mills are producing cardboard containers the sale for boxwood has deteriorated. Cardboard containers are of course cheaper and preferred by the manufacturers to boxes.

There is of course a good outlet for all classes of building timber, but it must naturally be well sawn and clean. Where it is kiln dried it is as good as, and in lots of cases superior to, the foreign timber now imported. We use home grown timber exclusively for all our house repairs, and find that it can be air dried most satisfactorily. We also have a good trade in posts and rails, which are used extensively by stud farms, but it seems to me that unless further outlets are found it is going to be difficult in the not too distant future to keep the sawmills fully employed.

The President (Mr. O. V. Mooney) in supporting the vote of thanks said :

Mr. McNeill has given us a paper the subject matter of which is of vital importance to foresters engaged in new afforestation in these islands. In a short time, all too short, he has drawn attention to the reasons for planning, the important points in planning and the traditional form of plan in almost all forest services in the world—the *working plan*. He has argued his case in a very positive manner and has shown his mastery of the subject by anticipating and parrying any possible counter argument that could be launched. Given the means to formulate and implement working plans, I wonder, having listened to Mr. McNeill could there be any possible sound argument against the adoption of the idea. We certainly must accept the idea of planning, the question is what way to plan.

If Mr. McNeill's basic idea is unacceptable to any of us then we must turn our back on organised planning for the future and accept in respect of ourselves his description of "jobbers" or *ad hoc* planners; making day-to-day decisions, giving rise probably to different techniques being applied to the same problems in different places without any common aim. While foresters in the new afforestation countries may not be too ready to have themselves dubbed jobbers it may not be evident to them how the ideal of the operative working plan may be achieved.

There should be planning but how can it be achieved? The spirit is willing but what is weak?

When I first learnt of the line that Mr. McNeill's paper was to take, my mind went back to the times when I was learning forestry, some twenty three years ago or thereabouts, and to the fact that the working plan was then perhaps the most important subject in the degree course in almost all forestry teaching Universities. In fact an undergraduate could not pass his degree exam. unless he furnished an acceptable working plan. Such may still be the case; it certainly was then.

This was not to be wondered at because the completed working plan was a documented reflection of field work in all that a student had been taught from surveying and road making to botany and soil science; from geology and meteorology to mensuration, thinning, costings, selection of species, and practical methods of dealing with forest problems.

It was, therefore, a source of some bewilderment to me on being launched into the world to find that this beginning and end of all things—the working plan—played little part in practice in any of the forestry services in these islands.

Why was this the case? Was it that the pattern of the working plan then taught was, as has been suggested, based too much on the European

classical lines and completely inapplicable to new afforestation conditions which presents untouched problems with new species? Was it that the pioneers, and foresters were very much pioneers in those days, felt too uncertain of the future, and were too preoccupied with the urgent work of completing their current planting programmes?

Was it perhaps that some working plans were made in the early days which cast the whole idea into disrepute and the awful limbo labelled "impractical theory." It is not difficult to imagine the picture of a detailed working plan drawn up on the first year of establishment of a big area of scots pine plantation on, say, exposed Old Red Sandstone mountain; a bright picture drawn of future crops, yields, roads and industry destined however to be completely obliterated in the course of two decades.

Such conjectures if founded in fact, taken individually, or joined together would suffice to cast the blighting eye of prejudice on the working plan.

Perhaps those men who knew about working plans then, grew up in their services and forgot the plan and its significance and application.

Times have changed, however, or they should have changed, and it would be difficult now to ignore the thousands of acres of forests laid down fifteen, twenty-five, thirty-five, and even fifty years ago which are yearly more pressingly commanding attention and demanding planned management. There are, too, the lessons learned from failure.

One would feel now, though foresters should never allow themselves to become over confident, that we may know enough to plan from the first days of planting. On certain types I think we have less reason to be sure of ourselves in handling our more advanced crops, but nevertheless any operations involving thinning, road making regulation of yield and fixing of rotation inherently demand the working plan. If our trees are worth their salt at all we must acknowledge the need for laying down plans for their future. It occurs to me though, that what is really of the first importance from the beginning is a simple but comprehensive *management record* from the first day of acquisition of any area of ground. This, in my opinion, vital record would give a complete history of the crop, would show every penny spent directly on that plantation, and every operation carried out, every failure and setback experienced—but we all know what a management record is. Here is something vital yet easy of achievement, a safe bank of facts and experience, a fertile field for the research worker, should he ever come, and a solid foundation for the planner of the future. Such a record might indeed suffice for a time until the fully established crop could be considered, at an age when its form, stocking and vigour had taken on a definite trend; at, say, the thicket stage, or after the first weeding and brashing, when the planner could assess the future with more confidence. Such a line of action might appeal in any service where it

might not be possible to achieve constructive effort with great speed. It would at any rate seem to me a short cut to getting started. So many things can go awry from the first year a plantation is laid down—damage by frost, weevil, fire, etc.—that, for a start at any rate, a young service might be wise to move forward the time for drawing up the working plan to the day when there is an established crop on the ground. Even after that, as all foresters know, the future must always be in doubt. I would prefer to see the plan applied after the first weeding and brashing for, to take an example, many foresters here remember the disappointing appearance of the earlier Douglas plantations when in the thicket stage as compared with the appearance of those plantations to-day. Such thoughts are chastening.

Planning is, I concede, desirable from the start, but vital and more practically appropriate at first thinning in a service set-up. I think too that the working plan would be welcome to foresters at that stage as something that would give them clear direction in their work and the objectives at which they should aim in that work.

Mr. McNeill rightly recognises the need for a working plan which is capable of change to fit changing circumstances and suggests a five year revision period as being most suitable. Such would be an essential for a working plan for new afforestation.

That the working plan should be made by the officers in charge of the forest or district I doubt.

In the realm of practice in every day forest-service work I very much doubt that such general practitioners would be able to devote sufficient time to the undertaking, and full knowledge of the method of drawing up a working plan might often be lacking. It would seem to me that out of the practice of each man drawing up his own working plan would arise too many varied techniques and I would prefer the idea of a central organisation—specialists who would defer to and consult with the local man but who would in fact document the plan.

In any service which aims at eventual normality of crop and forest, or sustained yield controlled by periodic or annual cuts, it seems to me that working plans formulated by a central group of specialists would be the more feasible.

With fine and valuable timber crops already under hands many may think it is only a question of where to begin.

Mr. McNeill has made his suggestions for the formula of the working plan and properly emphasised the great importance of the stock map when the project is under way but he stresses above all that whatever be devised it must be something absolutely applicable to the problem in hand. In new afforestation countries and with new outlooks the plan evolved might well prove to have very little resemblance to the classical formulae used in building up the great forests of Europe. But this would not matter so long as we counted our blessings and realised that

the wealth of our crops deserved planning and that most of the best forests in the world are a result of planning.

In a final reply to the three previous speakers **Mr. McNeill** supported, from personal experience, Mr. Burgess' remarks regarding the value of aerial photographs as an aid to stock mapping.

He sympathised with Major Doyne in his uphill task of managing a private forest under the present legislation and congratulated him on his wisdom and presight in working to a plan. He referred Major Doyne to the "Survey of Private Forestry Costs" being carried out by the universities of Oxford and Aberdeen and suggested that the results of the survey might assist him in assessing his costs.

He answered specific questions by stating that he regarded the unit for a separate written working plan to be the single local forest administrative unit and the officer to be entrusted with the compilation of the plan the equivalent of the District Officer in the British Forestry Commission.

Mr. McNeill was unable to support Mr. Mooney's suggestion that the writing of a working plan could with advantage in present circumstances be delayed until the woods had reached the thicket stage and pointed out that the initial selection of species was so important as to be regarded as the foundation of the management of any forest.

In conclusion, Mr. McNeill stressed the vital importance of avoiding failures by over elaboration and emphasized the necessity, at all costs, of devising a working plan that would in fact work.

LIFE'S UPS AND DOWNS

(Supplied by Lord Ashtown, Lansdown, Nenagh, Co. Tipperary).

Climbing, wavering, falt'ring, climbing
Up and down Life's treacherous tree;
Striving ever—by self-endeavour,
Upwards—that we may be free;
Past life's dangerous, branching sideroads,
On to sunny skies of blue;
But, when over-enterprising,
Falling, facing up anew.

—ASHTOWN.

REPORT ON EXCURSION TO COOLATTIN ESTATE

By T. McEvoy

ON Sunday afternoon, April 22, 1956, some sixty members of the Society and their friends visited the Coolattin Estate at Shillelagh, Co. Wicklow.

The party was welcomed by Major F. M. Doyne, Agent, and Mr. O. V. Mooney, President, thanked the Directors for the opportunity to inspect the historic woodlands of Shillelagh. Lady members availed of Mrs. Doyne's kind invitation to see the gardens while the men toured the woods.

In the time available it was possible to inspect only a fraction of the woodlands which extend to over 1,000 acres and comprise one of the largest private woodland properties in the country. The party entered the woods in an open mature hardwood screen of oak and beech, through a middle aged thriving japanese larch plantation and stopped to discuss management of an european larch scots pine plantation, 45 years old, and 60 feet high. Stocking had been very dense up to recent years when heavy thinning was begun reducing stocking to 250 stems per acre. Squirrels had deformed a high percentage of the pine stems and larch was not vigorous. While Mr. Mooney thought that the plantation would respond to continued normal heavy thinning, Mr. Clear favoured more drastic action reducing the stand to 100 stems per acre and encouraging larch to develop crown over half its stem length.

The next point of interest was a mixed 33 year old stand of norway spruce, sitka spruce, douglas fir, which had grown rather closely and was receiving its first thinning with emphasis on removing rough douglas fir dominants. Most of the produce was being prepared as pit wood for South Wales. Mr. Cusack at this stage detailed the requirements for wood for mechanical pulp for newsprint—1 and 2 metre lengths with 4 inches top diameter sitka spruce.

A 25-30 year old scots pine stand had been severely damaged by squirrels to such an extent that it was suggested that it might be worth while to fell all but select trees and replace with douglas fir which should give a much heavier yield on this dry but fertile soil. Scots pine standards and douglas fir should mature simultaneously. Mr. Donovan (Bree) doubted the economics of felling scots pine at pulpwood size while Mr. Doyle agreed with replacement but emphasised the value of high pruning the standards. Major Doyne found large douglas fir a very satisfactory saw timber.

A moist alluvial flat by a lake was occupied by an excellent norway spruce plantation 35 years old and over 60 feet high with about 300 stems per acre. Discussion centred on the economics of high pruning.

The party then proceeded to a block of mature woodland along the river. The main species here was the famous Shillelagh sessile oak of indigenous origin. There had been heavy fellings during the World War II for oak sleepers and treatment of the rather open woodland was discussed. One section had stocking reduced to 40 selected oaks per acre and had been underplanted with Douglas fir four years ago now up to 5 feet high. This was considered to be a satisfactory solution in this type of dry deep-soiled woodland with *Luzula-Vaccinium* undergrowth on which oak is a low volume producer and douglas fir thrives. The general opinion was that only the very best oak should be retained and stocking could be reduced to 30 oak per acre at a very early stage to allow the douglas fir more light.

The highlight of these oakwoods was a group of old scots pine with heights of 90 feet and breast height quarter girth up to 34 inches with estimated volume in the region of 400 cubic feet. These trees are of excellent form (see Cover photograph) and boring proved timber to be sound. Mr. Deasy explained that five specimens had been selected as 'plus' trees for seed orchard work. The Estate was co-operating with the Forestry Division and it was proposed to take cuttings from the crowns for grafting onto stocks in a seed orchard. In this way it would be possible to obtain seed supplies genetically identical with that borne on the parent trees in a matter of a few years. In this way a strain of scots pine of proved worth would be perpetuated in Irish forests.

After an inspection of the extensive sawmill, and working plant and a demonstration of saw tensioning by the "saw doctor", Major and Mrs. Doyne entertained the guests to an excellent tea and refreshments. Mr. Mooney returned heartfelt thanks on behalf of the Society and Major Doyne replied, hoping to have a further opportunity of showing the other woods to our members.

FORESTRY - AS I SEE IT *

By MICHAEL MAC GIOLLA CODA

AS I see it forestry has two aspects not alike yet closely related. The first which lends to it a romantic touch is forestry as it appears to the nature lover and follower of the simple life. The second, perhaps not so romantic, is none the less interesting and absorbing because of the study and practice of its various branches and related subjects. The latter is forestry carried out in a systematic manner and governed by national or private economics.

My first ideas of forestry, which must have been channelled into my receptive brain of boyhood's years, through reading numerous books of adventure about Canada and Australia, never represented it as it appears to me to-day. No serried lines of closely packed trees were for me then, nor great tracts of sombre forest, uniform in almost every detail. Rather had I visions of broken woodland, scattered clearings, and a motley assortment of trees, shrubs and plants, where creatures ferocious and timid roamed and where the air was filled with the uninterrupted melody of countless feathered denizens. My favourite picture of a forester was that of a man kneeling beside a lonely fire, in some distant foreign region, a day's trek or more from human habitation. In my imagination he was either cooking a simple supper or smoking his pipe before retiring to his sleeping bag for the night. Close by would be his faithful dog, and of course his trusty long barrelled shot-gun, which he used to destroy vermin and provide fresh meat for the camp pot. His forest grew and matured without silvicultural treatment and all it required was protection from forest pests, and fire. The only time the equanimity of the forester was disturbed, was when the gentle murmur of the breeze in the tree-tops was superseded by the roar of the forest fire, or when he was galvanised into action by the tell tale smoke spiral on the distant horizon.

To-day my impressions of forestry are entirely different, due to the fact that I have been introduced to the study of modern forestry and have had some practical experience and training in the subject. I say that I have been introduced to it because it is quite possible that a man could study forestry for a life-time and yet not master it. No doubt by perseverance and comprehensive study a person would attain a high degree of knowledge of the subject. Yet the more one learns about it, the greater need there seems to be for study, because new fields are forever opening before the mind of the student, so that to increase his knowledge he must likewise extend his studies to the various branches

* This essay won for the writer the sum of £15 donated by Irish Forest Products Ltd. to the Society for educational purposes. The Council allocated the money to the subsidising of the attendance of a student member at the annual study tour and the competition was confined to third year students at the State Forestry School at Avondale, Co. Wicklow.

of forestry and subjects related to it, namely geology, botany, entomology, plant pathology, meteorology, etc. These subjects together with new developments in technique, which occur frequently in the many branches of the industry tend to make it such a complex matter.

Forestry like agriculture entails the growing and harvesting of a crop. The crop is timber and it requires careful attention, and protection from insects, diseases, fire and other agents which might damage or destroy it. As in agriculture the crop, apart from thinnings, is harvested only when it is matured. As, however, a tree does not reach maturity until it is from seventy to one-hundred-and-fifty years old, the rotation of a forest crop corresponds to the length of time it takes the particular species of trees in the crop to reach maturity. When the crop is mature it is felled and replaced by a crop of young plants by either natural or artificial means. In turn this crop is tended and treated under a system devised and prescribed by the forester until it too reaches maturity and so the forest grows *ad infinitum*.

By the study of silviculture, which literally means the caring of woods, the forester learns to select the tree species that will best suit different situations and accordingly he stocks his woods with the species that will give the highest financial return in the shortest possible time on any particular area. A knowledge of silviculture also enables him to know how the various species of forest trees are affected by the light and shade, moisture and drought, soil and climate. Thus as well as helping him to select the proper species, it also guides him in his choice of the silvicultural system that may be most profitably practised and he can foretell how the crop will react. Due to the study of silviculture he is also able to form a plan of management under which the forest will be worked throughout its life. With this aid he can harvest the maximum volume of timber and assist nature in her work of providing raw material for man's use.

While the forester strives to produce the maximum volume and at the same time maintain a sustained yield, he endeavours to make his forest conform, as closely as possible, to the natural forests. He knows from experience, that if he does not do this, he may upset the balance of nature with detrimental results. By prudent planning he arranges his plantations, so that the danger of destruction by insects, pests, or tree diseases is reduced to the minimum if not entirely eliminated. He divides his forest into compartments of twenty to fifty acres by means of rides which are reminiscent of the natural glades in the virgin forest. He intermingles conifers with broadleaved trees in belts and groups and encourages wild life such as harmless animals and birds, because these are essential in keeping destructive pests at a low level.

Forestry is beneficial to both the individual and the nation. In many countries nowadays the state owns much of the forest lands and these forests are worked in accordance with national forest policy. The state-owned forests add to the wealth of the nation in many ways besides by

direct financial return from forest products. Most of the forests occupy the mountainous areas which are usually rugged, of low fertility, unsuitable for agriculture. These usually comprise the poorer types of grazing lands such as bracken or heather-covered hillsides, peaty moorland, and sanddune areas.

As a source of employment forestry is much better than sheep-farming. Whereas sheep-farming only provides employment for one man for every thousand acres, the same acreage of forest affords employment for at least twenty.

In some countries forestry-workers are provided with houses and very often large settlements spring up, and modern villages are built by the authorities in the neighbourhood of state forests. In this manner forestry is most beneficial to the countryside and to the nation as a whole, mainly by reversing the tide of migration from the rural districts to the cities and industrial towns. The traditions of rural social life are revived on a new footing and places, which formerly were only inhabited by a few lonely shepherds and their flocks, take on a new lease of life and the valleys and woods re-echo the musical laughter of youth where previously silence and solitude reigned supreme. Forests lend an air of enchantment to the countryside which lures the tourist thither. They harbour wild game and thus provide excellent recreational facilities for campers, sportsmen and nature lovers. Forest lands are perhaps the ideal places for all recreations which are essential for the health of both mind and body. When forests exist on water-catchment areas they serve natural reservoirs and purify the water. They check siltation and so give a longer life to reservoirs and dams. On the hillsides they act as a natural sponge by conserving and controlling water, giving it to the agricultural low-lands in moderate supplies, providing excellent irrigation for agricultural crops, and on the other hand they are an effective means of preventing lowland flooding.

Forestry is one of the major factors of our national wealth. Forest products do not mean only timber and firewood because to-day the products and by-products of the forests are well-nigh innumerable. Among them we find such things as hardboard, paper, wood-wool, rayon, matches as well as turpentine, resin and plastic. As time goes by more uses are being discovered in the research laboratories for the chemical products of timber. Wood and its products are essential for each one of us and we are daily becoming more dependent on it, despite numerous inventions and discoveries of new materials to substitute for it. When it is discovered that a new material can be produced from timber, it means that factories must be built to manufacture the various articles from the wood and consequently there is an increase in industries and employment. Thus the state forests constitute an important part of the national wealth, and if they are managed properly they will provide a constant income, without encroaching on the reserve of timber, as the annual cut in the forests would not be greater than the annual increment.

Despite the fact that forestry has become highly commercialised and a leading industry and source of affluence in most countries, it still has a certain amount of sentimental appeal for us all. Nature has given freely from her storehouse of odours and colours to the forests. Surely of all smells in the world the smell of many trees is the sweetest and most fortifying. The smell of a forest is infinitely changeful; it varies with the hour of the day not in strength merely, but in character, and the different sorts of trees as you go from one zone of a wood to another, seem to live among different kinds of atmosphere. Yes indeed!

"Boon Nature scattered, free and wild,
Each plant or flower, the mountains child,
Here eglantine embalmed the air,
Hawthorn and hazel mingled there"—*Scott*.

Surely there is no one so void of sentiment, who, when surrounded by tall trees and looking across an expanse of forest, is not deeply moved by the panoramic vista. The majestic serenity of nature chases all thoughts of material things from one's mind and one feels that like

"A tree that looks at God all day
And lifts her leafy arms to pray."

one can commune with God in peace, and feel His divine presence secure. Yes! forestry to-day retains and portrays all that is best in nature, and to-day also, poets are inspired to write poetry, such as Wordsworth, Hopkins and Kilmer wrote, of trees and wooded hill and dell.

Obituary

MRS. ALICE H. HENRY

1883-1956

The daughter of an eminent physician and wife of a renowned forester, it is not surprising that these sciences were a major interest to Mrs. Henry all her life. Neither is it surprising to those who knew her that this interest was an active one. Her father, Sir Lauder Brunton, was a prolific writer on medical subjects and, until her marriage, Mrs. Henry aided him tirelessly in preparing his material for the printer. She married Professor Augustine Henry when he was embarking on his six year task of producing the monumental "Trees of Great Britain and Ireland" in collaboration with Mr. H. J. Elwes. Mrs. Henry's assistance in this work was enormous. She took part in all sides of it—secretarial, research and translation—and accompanied her husband on his expeditions to study trees at first hand which took him to many countries.

After his death in 1930, Mrs. Henry presented her husband's collection of tree specimens to the National Botanic Gardens, Glasnevin, to form the "Augustine Henry Herbarium." She spent eight years arranging and cataloguing the 9,000 specimens which it contains and the herbarium is now in its comprehensiveness and accessibility a most valuable national asset for the study of forestry.

Mrs. Henry's own interests were many. Her charming house in Dublin was a centre of culture where poets and artists met and where she gave parties for her musical and literary friends and her husband's academic colleagues. To these gatherings would be invited her young forestry proteges, but such was her skill as a hostess that they would feel happy and at home amidst the brilliant conversation. The depth and thoroughness of her own knowledge of many subjects was profound and one was always struck by the quickness of her wit and extent of her reading. From her aunt, Mrs. Stopford Green, came her interest in Ireland and her desire to help all good national causes.

Mrs. Henry was a member of this society from the start and was elected an Honorary Member in 1947. She made handsome contributions to our funds in our early days and helped the establishment of the society in every way possible.

MR. JOSEPH P. HARTE

The sudden death in April last of Mr. Joseph P. Harte came as a shock to many in Irish forestry circles.

As a forester on the staff of the Forestry Division of the Department of Lands since 1935 Mr. Harte had the respect and confidence of all his colleagues. A native of Moone, Co. Kildare, his earlier training

was in agriculture and horticulture which subjects he studied at the agricultural schools at Ballyhaise and Mountbellew and at the Albert College, and the botanic gardens, Dublin. His knowledge of those subjects proved very useful in his coming to grips with the closely allied subject of forestry.

Mr. Harte was a shrewd and discerning forester and was quick to get down to the essentials in any scheme of work. Thriving plantations at Mullingar, New Ross, Mullinavat and Avoca forests stand witness to his ability and industry. In the last-mentioned forest he proved his worth as a nurseryman where, during the past five years, the management of a ten acre nursery was among his duties.

His death is a loss to our Society of which he was an enthusiastic member. At our study tours he was a familiar figure and on such occasions was always ready with his help in the identification of rare trees and shrubs, an activity in which he was particularly skilled.

A quiet and unobtrusive man, he seemed reserved to those meeting him for the first time. Among his friends, however, he was capable of being quite a brilliant *raconteur*. He had the gift of being able to interweave through the most serious pieces of conversation some subtle bits of humour to the delight of those present. His wit was, however, never unkind.

The sympathy of members goes to Mrs. Harte and family.

MR. LAWRENCE CUMMINS

As we go to press we get news of the death, after a short illness, of Mr. Lawrence Cummins, Forester in Charge, Killeshandra State Forest, Co. Cavan.

Born in Co. Wicklow, Mr. Cummins served in Bunclody, Ballygar and Cahir-Glengarra forests. In all of these centres he acquitted himself well but it was in Killeshandra, where he had been since 1945, that he gave the most distinguished service. He was an agreeable and conscientious man and will be missed by all his colleagues.

To Mrs. Cummins and daughter we extend our sincere sympathy.

WHAT WOOD IS THAT?

By DR. ALFRED SCHWANKL

(Thames and Hudson, 25/-)

SKILL in the identification of timbers by eye alone has hitherto been attainable only by long experience but in this book we are presented with a short cut to that attainment. The most important part of the book, and perhaps the most original, is the small collection of 40 actual timber specimens. These are in the form of thin slices of timber glued to cards—4 to a card—and showing longitudinal surfaces of 38 common native and imported timbers, and both radial and tangential surfaces of elm. If these surfaces are of lesser diagnostic value they are the ones which are most often visible and which it is most desirable that we should be able to identify at a glance.

The text, ably done into English by H. L. Edlin, is divided into three parts. Part one gives a succinct account of the gross features and properties of timber and their use in identification. Wood structure, grain, colour, hardness, specific gravity, shrinkage and seasoning are all clearly outlined.

Part two consists of the keys. We are given twelve keys, each based on a distinct property of the timber or of the tree from which it is got. All are cross-referenced to the first which is called the main key, and is based on the colour of the timber. Six colours are here distinguished, namely, whitish, yellowish, greenish, reddish, brownish and blackish. But we find that our process of identification may begin from any of the first seven keys, from which we are referred back to the main key to complete the process.

In the third part we find more detailed descriptions of the timbers indicated by the keys, each preceded by a brief description of the parent tree. Following these are a comprehensive glossary and an index of timber uses. This latter makes fascinating reading. The objects listed range from aircraft, arrows and artificial limbs down to xylophones and zithers.

It is important that a forester should know his trees; it is equally important that he should know the timbers which they produce. Such knowledge will be quickly gained by a study of this book. Despite such inaccuracies as the reference on page 26 to "a cube $3 \times 1 \times 1$ centimetres" it succeeds admirably in helping us to answer the question posed by the title.

N. O'C.

TREES, WOODS & MAN

By H. L. EDLIN, B.SC., DIP. FOR.

Published by Collins, 14 St. James's Place, London. 1956. Price 30s.

AN attempt has been made in this book to explain why Britain, a land of tree-lovers and timber users, is so poor in forests. In doing this the author ranges over the period from the close of the Ice Age to the present day.

In describing the processes that led to the disappearance of so much of the natural woodland he draws sharp pictures of the shifting cultivation and other deforesting activities of the men of the Neolithic Age, those of the Bronze Age, the tribesmen of the Iron Age, the Romans, the Anglo Saxons, the Danes and the Normans.

Mr. Edlin does not, however, confine himself to the story of man's destruction of the forest: a section is concerned with the biology of trees considered as though growing in an environment uninfluenced by man's work. There are chapters devoted to efforts made and being made to protect and restore the woods with emphasis on aspects scientific, economic and aesthetic. Finally there is a discussion on the major species of trees of Great Britain both native and introduced. Each species is dealt with separately in regard to its individual characters, distribution, requirements in respect of soil and climate and value for commercial and amenity purposes.

Among some references to Ireland can be found mention of the fact that this country can claim only one native tree that is missing from the natural flora of Britain. That is, of course, the strawberry tree (*Arbutus unedo*) which is also native to Portugal and whose survival so far north is one of the fascinating mysteries of botanical pre-history.

Although the book was written for the enquiring layman rather than the professional forester and deals almost entirely with conditions in Great Britain it would, nevertheless, be of great value to an Irish forester.

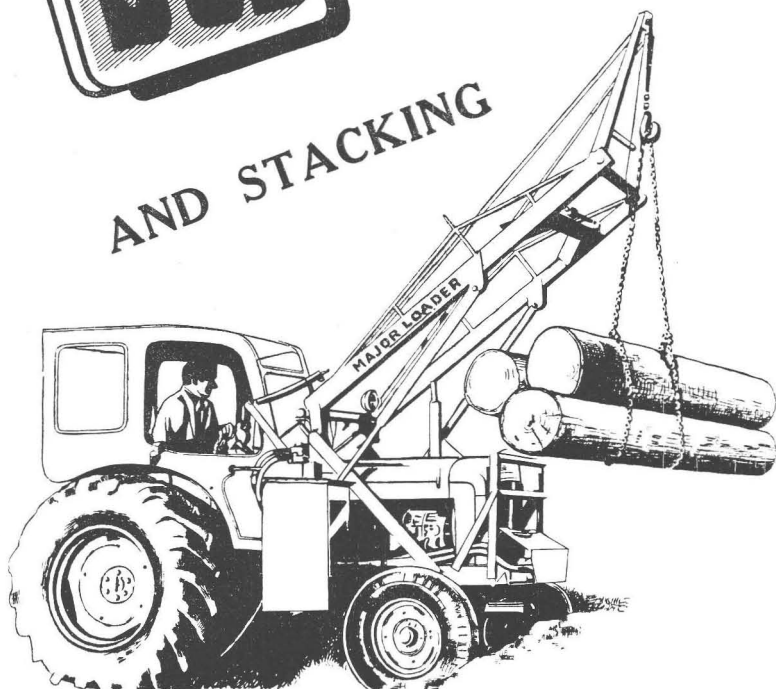
It is illustrated with 27 colour photographs, 30 photographs in black and white and 2 line drawings.

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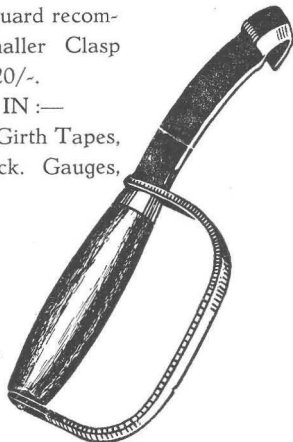
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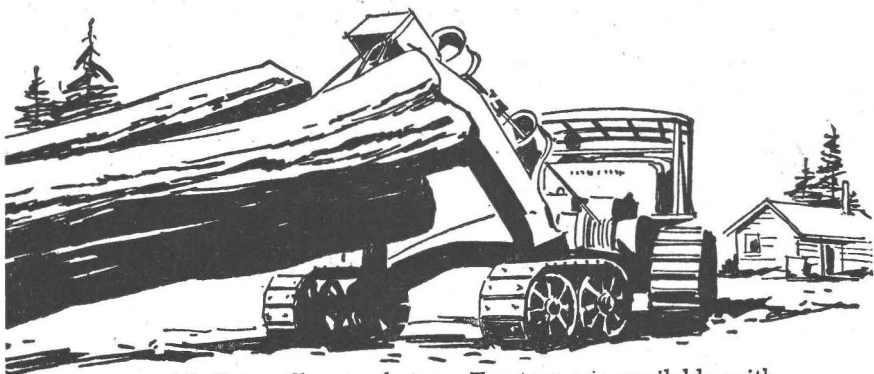
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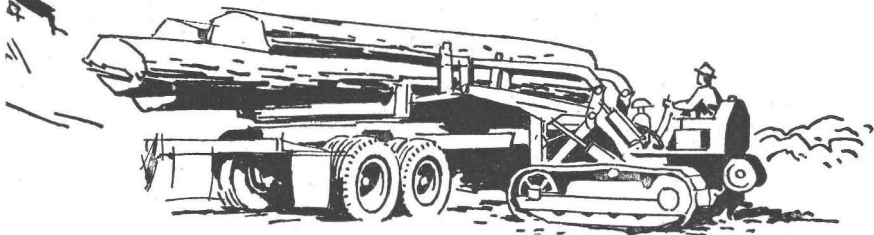
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