# IRISH FORESTRY

## Journal of the Society of Irish Foresters

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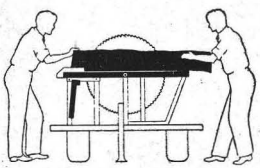

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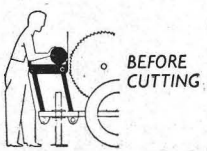


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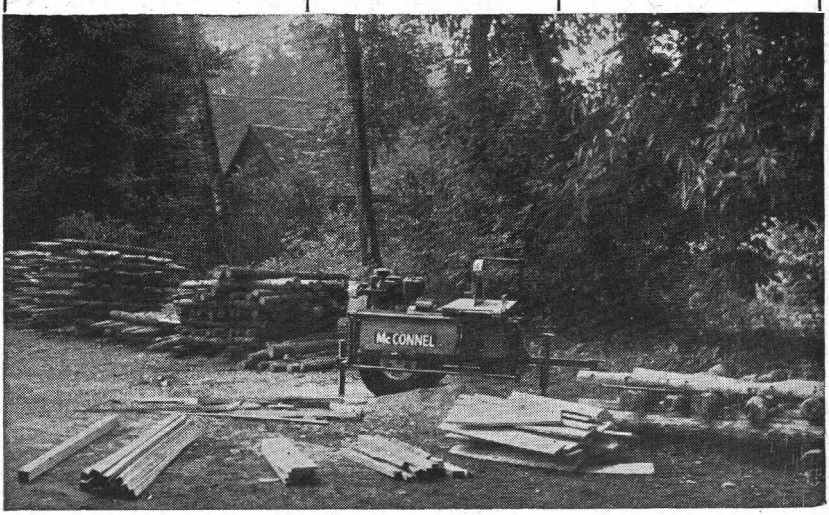


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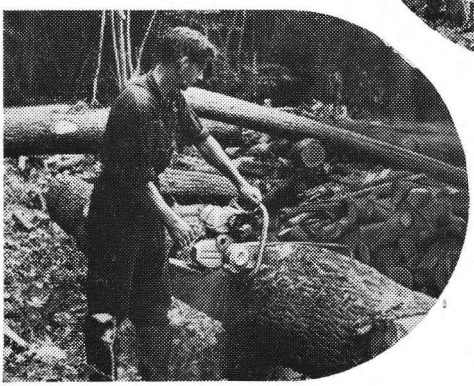

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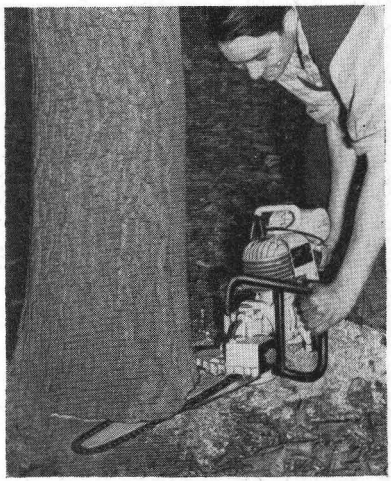

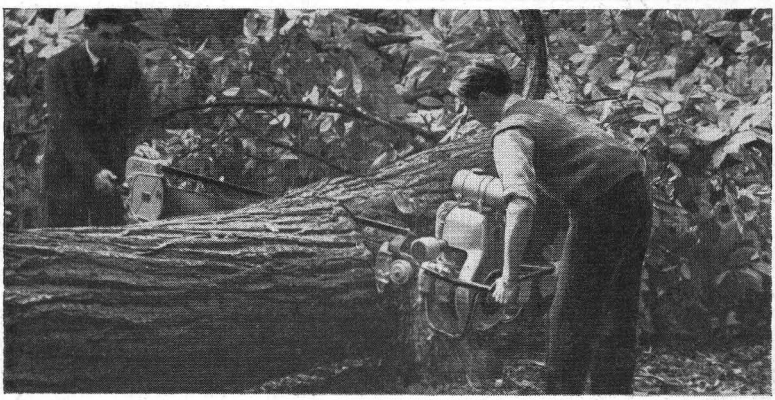

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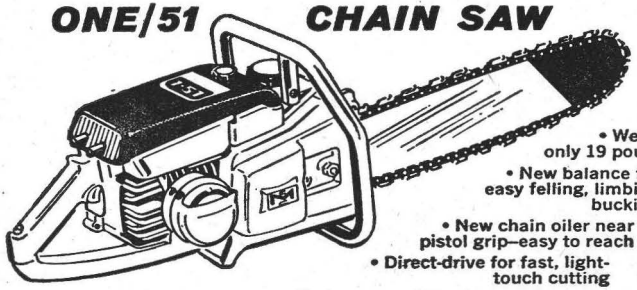

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IRISH FORESTRY

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# Potentialities of Home-Grown Timber *

R. P. Woods

(Timber Development Association Ltd.)

I should like to express my thanks to you for the honour you have given me of addressing you on this subject. That it should be my first visit to Ireland gives me added pleasure, particularly as I was originally trained in Forestry, but alas that knowledge has been particularly neglected since my work, Advisory Department, is largely concerned with the resultant produce.

Naturally—or should I say unfortunately—my remarks must be coloured by conditions as I see them in England.

It is obvious that the problems affecting English home-grown timber are the same as those for Ireland, and I believe that the major problem is the disposal of the thinnings.

A quick examination of your State Forests Report for 1957/8 shows that 20,000 acres were planted, 23,268 acres of productive land was acquired, 7,492 acres were thinned giving a yield of 2,077,250 cubic feet—but this should have been higher had it not been for the gales of February, 1957 when approximately 3m. cu. ft. was blown down in 144 forests. It is extremely interesting to see that you are undertaking a Census of Woodland for all crops 10 years and upwards. This is the right method of approach but I feel it is unwise to base too much reliance on resultant figures. Nature has a nasty habit of upsetting calculations and Robbie Burns had the right words for this "The best laid schemes of mice and men gang aft agley"! Your own experience of the 1957 gales shows how such plans can be upset.

As in the case of England the possibilities of using thinnings for the production of chip-board mills or pulp is, I see, being investigated by your Forest Department. The difficulty with both these ideas is whether the planners have the necessary vision to foresee requirements. It is common knowledge that mass production is always cheaper than the small unit, and this field does require vision because a mill set up to meet present day or even five year production would be too small to cope with the volume of 20-25 years ahead and such a unit would run at a loss until the raw material could meet the capacity of the plant.

On your present programme of 1,000,000 acres this would yield

* Lecture delivered before the Eighteenth Annual General Meeting of the Society, 19th March, 1960.

approximately 84,000,000 H. ft. per year. One-third of this to your sawmillers will give approximately 28,000,000 H. ft. and two-thirds to the board and pulp mills would give 56,000,000 H. ft. Sawmillers of modern mills require half a million cu. ft. per year, the boardmillers want 3,000,000 cu. ft. per annum and pulp millers require 15,000,000 cu. ft. Then there are transmission poles, mining timbers, sleepers, and other needs. It has been estimated that a forest acreage of 400,000 acres within easy reach of such mills could give 32,000,000 cu. ft. per annum. These figures have been derived from the summary of a symposium held by the Society of Foresters at Lyndhurst in November, 1959, and I would suggest that it would be well worth reading—5/- per copy from the Society of Foresters, 7, Albyn Place, Edinburgh, 2.

To return to the orignal subject of this talk—the potentialities of home-grown timber. Economists and other wizards of finance have shown that it is doubtful whether either country could be completely self-supporting in its timber requirements—certainly not Great Britain. By November, 1959 you had imported 29,160 standards or 4,811,400 cu. ft. In 1958 your imports amounted to 3,868,425 cu. ft. or 23,445 standards and you produced from two Departmental Mills 83,276 cu. ft. or 54 standards approximately. This is not meant to be disparaging but to show the gap between what our countries can produce as opposed to need, Great Britain is in a very similar position comparatively.

You will no doubt have read in the various forestry journals that the question as to whether to produce quantity or quality has exercised much ink and thought. There has been a certain amount of wild and woolly talk on the question of quality and as yet we do not know what our forests can produce chiefly because, with the exception of the Scots pine, they are all exotics. You are concentrating on Sitka spruce 43.2%, Pinus contorta 30.2%, Norway spruce 9%, Scots pine 4.5%, larches 4.3% and other conifers 2.6%—with oak and beech leading in the hardwoods—again mostly exotics, and no doubt you have found that these species have proved the best for the climatic conditions existing over here. Your oaks were of course famous as history has shown. The big $5,000 question is what is the quality like? I cannot speak on this not having seen any plantations or sawn material but if it compares to the 20-25 year old material grown in Kielder Forest then there is little to worry about. English foresters are aiming at 6 rings to the inch and up and clean lengths. This entails high pruning but it is felt that the resultant price would justify such action if the final crop can be estimated, and in this respect I feel that such work would be justified. It should be possible to ascertain your best trees in a forest—high prune these, and merely brush up what would be the thinnings to enable the marker to get through a plantation. I realise that this could be costly due to labour charges, but it is worth giving it some thought, particularly the smaller planted areas.

Extraction and delivery costs were greater than the cost of growing

the timber therefore greater attention must be paid to this side of growing timber and I feel that when planting, alignment of roads and rides must be done with this view at the back of the mind.

Assuming all these criteria can be achieved how does the home-grown timber compare with imported. It is suffering in England from the war, when any piece, type or kind of wood could be sold and used. Once imports free of licence appeared, then home-grown was almost a rude word. The fault lay with the producer but this is now being remedied by the setting up of the Home-Grown Timber Marketing Corporation and the adoption of grading rules for both hard and soft woods. This is a must for any timber producer because the architect and designer must know what he gets if he specified a certain grade. It must be reasonably dry and there would appear to be no reason why timber produced in the British Isles should not be equal to any of the imported material, but it must be well manufactured. These remarks apply to both hardwoods and softwoods. In his Auditorial Address to the Dublin University Agricultural Society, Mr. J. Durand also emphasised these points, and he also stressed the point that if the forester has the encouragement of a steady market, then publicity and public relations must play their part in encouraging consumers to use the material available.

I would draw your attention to an article by Professor M. L. Anderson of Edinburgh University in the Quarterly Journal of Forestry, October, 1958 entitled "Effect of Site and Silvicultural Treatment upon Timber Quality" and in his summary he states "the most effective means whereby the quality of the resultant timber may be improved are by selection of species initial spacing, stand structure and thinning" but again I feel I am preaching to the converted, but from my own observations there is still room for improvement on these factors.

What are the possibilities of using your home-grown timber? Given the above requirements there is no reason why the material should not prove suitable for all uses to which you put the imported timber, but I must repeat, it has to be properly graded, seasoned and manufactured. One difficulty at the present moment is due to lengths but this I feel will be overcome as the trees mature. Much can be done by architects restricting their lengths in designs to up to 16 ft. and widths over 7 ins. as much as possible, and by publicity and example they should be encouraged to specify the material.

My Association has carried out bending tests on Scottish grown Larch with results that show that it can be upgraded into Group I timbers (CP. 112) 1,000 lbs. F, and that further work should be done to give working stresses for shear and compression. The F.P.R.L. and our own Commission have been doing a lot of work on the strength properties of our softwoods and I feel that similar tests or organisation could well be set up over here. I would go so far as to say that it is in your own interests to do so—once it can be shown by testing that your material is satisfactory then designers will use it.

We designed a 3-bedroomed 1½-storey timber house for the Forestry Commission utilising a 3 ft. and 4 ft. grid system of prefabricated panels using Sitka Spruce, Japanese Larch and Scots Pine for wall cladding, 3″ × 1″, 5″ × 1″ and 4″ × 1″ Scots Pine boards for flooring, and 3″ × 2″ and 6″ × 2″ Scots Pine framing and carcasing. Certain difficulties arose but since it was a prototype the feeling was that these could be overcome.

In this connection when one examines the size of tree from which the Scandinavians cut S.E. timber I am amazed at the attitude of our people. It would appear that they cannot think farther than pit-props. However this attitude is changing but it does require special equipment and methods for dealing with the small sizes of thinnings. Gordon R. Jacob of Chester has developed a circular saw or rather twin saws which can be varied to accommodate any width of material. This material is graded according to diameter for feeding to the two types of saws and by grading it permits a continual feed to the saws. This is one firm which has considered the problem seriously and I feel that if one firm can do it, or one country can, then so can we. It must be mentioned that a regular constant supply is necessary for economical running. A full report was issued in the magazine "Wood".

I feel that apart from the scrub hardwoods little trouble should be experienced in disposing of hardwoods. Good quality oak, ash, sycamore, beech, etc., will always be in demand for joinery, furniture, veneers, etc. I would mention that the Chilian Rank & Goigne, *Nothofagus spp,* are being grown satisfactorily in England and if it has not already been tried over here, might well merit attention. Scrub hardwoods can be pulped, providing the resultant material has the requisite amount of softwood pulp added.

I could continue for much longer indicating outlets for home-grown timber, but this would take too long, and would become more boring than this has already been. However with modern timber connectors, modern glueing techniques and preservatives the so-called disadvantages can be overcome, and many new markets for home-grown timber will be opened up providing the necessary precautions already mentioned are carried out and I will repeat them—

1. It must be graded.
2. It must be well seasoned.
3. It must be well manufactured.
4. It must be in good supply.

Given these, I would end by saying that home grown timbers have immense potentialities.

# Some Notes on Shelter Belts in Irish Coastal Regions*

O. V. MOONEY

THE frequency and severity of gale force winds and the average velocity of the wind in Ireland is regarded as being amongst the highest for any country in Europe and, of course, this factor of wind is most pronounced along our coast lines. The influence of this aspect of climate on tree growth and on the trees we can grow here is critical to the Forester and is a problem that he must study with constant care even though he is not normally concerned with shelter belts as such.

In considering the problem of selecting the right tree species for shelter belt planting anywhere we look for the tree that will withstand the force of the fiercest gale and yet continue to increase in height and maintain its vigour and form. There are not so many tree species that would fulfil these requirements but if we must, as we will now, consider trees for shelter at or near the sea the test is even more severe because we must consider also the greater unimpeded strength of the wind laden with salt spray and very often with rasping sand as well.

Indeed, in this regard it may be of interest to recall that salt can be found deposited inland for as much as 25 miles after severe gales and in the ordinary way is deposited and has considerable influence for some ten miles or more inland from the sea.

However, in discussing our subject here I will confine myself to shelter belts beside the sea or within a mile or so of the sea.

Before one can decide what tree species are most suitable for the job one has to consider the type of ground on which the belt has to be grown and the purpose for which it is required.

Along the east and south coast of Ireland and particularly in the east, one usually meets with mineral soils on farms near the sea but along the western seaboard peaty surface conditions are not infrequent and may at times come right down to the sea. Another type which is met on any coastline but perhaps more particularly in the north and north-west is the pure sand with or without much surface holding vegetation.

The mineral soil usually widens the choice of species whereas the peat type reduces it to only two or three species. The pure sands are a difficult and complex problem which we would not have time to discuss now, and which, when undertaken is not always rewarded with success.

Again the shelter belt may be required for a number of different purposes but the needs more usually met with are shelter or amenity

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* This article was originally prepared as a talk, and acknowledgment is due to Mr. Mooney for permission to publish it. [Ed.]

for dwellings and houses, shelter for livestock, shelter from shifting or wind blown sands and for protecting permanent tillage or gardens. More often than not of course the belt is intended as an all purpose one providing some or all of the foregoing requirements. For cattle shelter, and indeed for a good all purpose belt one requires trees furnished right down to the ground and excluding through draughts in so far as is possible to procure. On the other hand for protection of permanent tillage, fruit and garden crops a more open or permeable belt is often preferred and this type of belt is often favoured near dwelling houses where some circulation of wind is desirable. In sheltering buildings it is important not to plant trees too near—a general fault in my opinion, and I believe that 50 yards should be a minimum distance from any dwelling place. It is a good thing to have plenty of light and movement of air round a house while to sleep or try to sleep in a house within twenty yards of an eighty foot high tree in a full gale is not a restful experience for anyone who is sensitive to noise.

To meet the requirements I have mentioned and to give quick results, which is of course the first thing people ask for, my list of trees would be, with conifers first :—

Monterey pine (*Pinus radiata*); Monterey cypress (*Cupressus macrocarpa*); Austrian pine (*Pinus migra* var. *Austriaca*); Contorta or Shore pine (*Pinus contorta*); Mountain pine (*Pinus mugo*); Sitka spruce (*Picea sitchensis*) and Lawson Cypress (*Chamaecyparis lawsoniana*). Of the broad leaved trees Sycamore (*Acer pseudoplatanus*) is always recommended as also is Beech (*Fagus syvatica*) and Oak (*Quercus robur*) but the latter two trees are slow growers and not really effective. Three lesser known trees which are showing great promise as shelter trees on dry mineral soils are Turkey oak (*Quercus cerris*) and the two species *Eucalyptus urnigera* and *Eucalyptus Johnstoni.*

Monterey pine and Monterey cypress are two tree species which have grown with great vigour and effect around the coasts of Ireland and in my own view are the best trees we have for shelter belt work near the sea. They may be difficult to establish and are best confined to dry mineral soil types, though Monterey pine gives good performance on sand dune ground also.

Austrian pine is also a good shelter tree but is slower growing and may not give as much low cover as the others just mentioned.

Lawson Cypress may prove a very useful species to use in conjunction with other species on the outside windward line or lines of the shelter belt to give low cover as this is a very good tree for holding its foliage right down to the ground.

On peats contorta pine helped by an ounce of G.M.P. at planting is undoubtedly the best grower though in certain conditions it is not too stable a tree. Grown in combination with contorta pine for low cover the mountain pine can be very effective though a very much slower grower. For this reason and due to the fact that it does not grow high enough mountain pine is not recommended for use pure in shelter belts.

Sitka spruce may have its place in seaboard planting on the better peat types or on moist or rushy soil types but is not recommended for dry soil or sandy types of ground and, to be effective the belt should be planted in some depth. Belts of three or four rows or less at six or eight feet spacing will not prosper well or give as good results as wider belts.

With regard to the broad leaved trees they are not likely to be very effective or afford sufficient shelter unless grown in considerable depth and are better used in mixture with the conifers as marginal rows or belts. However, though comparatively untried the two eucalypt species are amongst the fastest growing trees we have and are very wind firm besides being evergreen and very comely in appearance. They will do well on dry mineral soils but cannot as yet be recommended for peats and soft heavy soil types.

Finally, a word about the width of belts, positioning and the spacing of the individual trees. A great deal of research has been done in recent times but results have not been entirely conclusive as to the proper width and actual effect of the shelter, besides envisaging shelter belts of 33 yards at a minimum in width which, however ideal, might be quite unacceptable to most small farmers due to non-availability of ground. Certainly the wider the belt is, up to a point, the more efficient it becomes, particularly beside the sea where the windward rows are usually severely cut down and stunted by the wind. As few as a single or one or two rows at 6′-8′ spacing or thereabouts of trees usually fail in their purpose and one should aim at much wider belts if possible, but in the final reckoning the width of the belt is determined by land availability and one cannot be dogmatic on the subject. In some countries we find them recommending that 5% of the total farm area should be under shelter belts so that your 50-acre farmer would have to plant 2½ acres.

As to the spacing of the trees it is generally accepted that with faster growing conifers wider spacings than are normally used in Forestry may be adopted. I think that spacings 6′-8′ between the plants and 8′ to 10′ between the rows of plants will give good results provided the ground is not too infertile. To this I would add that to have a good shelter there should be at least five rows if possible which is tantamount to suggesting a belt of between 32′ and 40′ at its establishment. Some people "stagger" the trees in the rows and this is quite a good line.

The man who knows the locality is the man to judge best the prevalent wind which may vary very much from place to place. The south-west wind is the prevalent wind in Ireland but again it may not always be the damaging or obnoxious wind and this can only be determined by local knowledge. In short to protect the maximum area a shelter belt should as far as possible have its long axis perpendicular to the direction of the wind against which protection is required.

Estimates are various as to the amount of protection afforded by a

good tree belt but reduction of wind flow does extend on the leeward side for a distance of twenty times the height of the trees and the point of most effective shelter is regarded as being at a leeward distance of three times the height of the belt. Therefore with a belt of trees 50′ high we would have best protection at 150′ and at least some protection at 1,000′. The old idea was that you got appreciable protection up to 10 times the height of the belt on the leeward side, and this does seem to be a good averaging out of the numerous more recent calculations.

Good shelter belts give great benefits but there is no facile rule of thumb for their establishment and the matter requires careful study and the help of experienced knowledge as to selection of species, spacing of species, and positioning and width of belt, if the undertaking is to be made worth while and the results crowned with success.

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## *Review*

# " Experimental Design and Analysis in Forest Research "

By J. N. R. JEFFERS

Stockholm, Almqvist & Wiksell (for the International Union of Forest Research Organisations), 172 pages, Sw. kr. 30.

THE object of this book is, according to the author's introduction: "to make statistical methods more available to foresters engaged in research." The first two chapters, comprising about one-third of the text, are devoted to the simpler forms of standard experimental design and the corresponding analyses. After a short chapter on experimental design in general, in which the standard designs are described, the second chaper gives detailed instructions for the analysis of results relating to randomised block, latin square, factorial and split plot designs. In each case an example is analysed in detail, and model work-sheets are given in an appendix. In the case of incomplete block designs only a brief description is given and the reader is referred to other literature for methods of analysis, while more sophisticated types of design are given no coverage. Subsequent chapters deal with trans-formations, applications of chi-square, sampling, regression analysis and covariance analysis, and the final chapter is on the presentation of results. Some highly abridged statistical tables are given at the end of the book, and there is an English-French-German glossary of statistical terms (without definitions).

In spite of the very great detail with which methods of computation are described, it is unlikely that this book will be of much use to anyone who has had no previous contact with the concepts of modern statistical

theory or experimental design. Explanations are concentrated mainly on purely numerical aspects of the work and very little is said about its logical basis. Thus, for example, there is no adequate exposition of such concepts as "variance", "interaction" or "degrees of freedom", nor is there anything explicit about the role played by randomisation in ensuring the validity of the standard tests of significance. The book could, perhaps, be used as a working handbook by someone who already has a grounding in statistical theory, and who finds it an advantage to have the examples taken from the field of forestry research rather than from a wider range of biological applications, but any research worker is likely to encounter in practice many problems on which this book gives merely a reference to further literature. The absence of an index is an obstacle to its use as a work of reference.

A special feature of the treatment of the analysis of designed experiments is the "preliminary analysis" given with each example, in which assessments of significance are made using ranges obtained from the experimental results. It is doubtful if the use of this technique offers any worth while advantage. To a person having access to a fully automatic desk computer the saving of time as compared with the full analysis is small, and under present-day conditions it would surely be a highly uneconomic allocation of resources to have a research worker engaged on this type of work without adequate computing facilities. On the other hand, there are a number of points where shorter arithmetical methods might advantageously have been given. One instance is in the analysis of factorial experiments with factors at two levels where the use of differences to obtain mean squares is not mentioned; thus, on page 38 it would surely be easier, as well as giving better insight into the nature of the computation, to calculate the sum of squares for P as $(73.70 - 79.50)^2/48$ rather than as $[(73.70)^2 + (79.50)^2]/24 - 488.9633$, and to calculate the MP interaction sum of squares as $(30.05 + 45.95 - 43.65 - 33.55)^2/48$ instead of using the much longer expression given.

One noteworthy omission from the methods of analysis suggested is the partitioning of treatment sums of squares relating to quantitative factors into linear, quadratic, and higher-order components. Any experiment which is intended to give more than a qualitative result will need this technique if the data are to be adequately interpreted, and, as it happens, one of the examples in the book gives a good illustration of this point. In the example in Section 2b, when the "treatment" sum of squares is partially partitioned (Table 2b. 7), the "between composts" component is found to be non-significant, and the conclusion is drawn (on page 34) that "there were no significant differences between composts prepared at different dates." In fact, however, a slight further calculation will show that, of the sum of squares, 2.9021, found for the "between composts" effect, the portion due to the linear effect of date of composting is 2.0167, and that this gives an F-ratio significant at the 5% level. The conclusion is, therefore, that greater growth was

significantly associated with more recent preparation of the compost. The omission of this step in the analysis is particularly unfortunate in the present instance, as mere inspection of the summarised results suggests some relationship between date of preparation of the compost and growth, and no experienced worker would happily accept the negative conclusion drawn by the author.

Most of the material in section 2g (Combination of Experiments) could have been omitted if the nature of the so-called "error" components had been brought out more clearly in the earlier sections. Thus, if we recognise that in a randomised block experiment, "blocks" is in effect a second factor, and that "error" is actually the interaction between blocks and treatments, it will become obvious that when such experiments are to be combined, a further factor comprising "places" (or "years") will naturally appear, and that under certain circumstances the interaction of this additional factor with treatments will provide the appropriate error mean square. The approach adopted has led to some confusing and possibly misleading statements on page 54, where it appears to be implied that if the "places" form a random sample of all possible places, then the treatment mean square can be tested against the pooled error—even though a significant "places × treatments" interaction may have been found. In fact it is precisely in these circumstances that the interaction with places is the appropriate mean square for assessing the significance of the treatment effect. In the contrary case, (where the places do not constitute a sample) once a significant interaction effect has been found, the significance or otherwise of the treatment mean square becomes meaningless. Yet another hypothesis to be considered is that the selection of places forms a fully representative (not a random) sample of possible places; it is in this case that the pooled error mean square can be used, in spite of the existence of an interaction. A more unified approach to designed experiments in general would also have enabled a clearer account to be given of the analysis of split plot experiments; in particular the component labelled "Error (a)" in Table 2d.10 is actually the interaction blocks × gangs while "Error (b)" is the sum of the interactions blocks × tools and blocks × tools × gangs.

The inclusion of a chapter on transformations is to be welcomed, as the advantages of transforming certain kinds of data before analysis are often not sufficiently realised. However, the first seven pages of this chapter (Chapter 3) are of doubtful value. A method is given by which data with non-uniform variance can be analysed without the use of a transformation, at the expense of becoming involved in the rather thorny subect of comparing means from populations with different variances. In fact, a brief glance at the basic data in this example suggests that a logarithmic transformation should have been used, and this would have completely avoided the difficulty.

The chapter on sampling (Chapter 5) is also a very useful feature of the book, and much of the information given here on statistical aspects

of sampling should be of interest to workers in forestry even if not engaged in research. Some disappointment is felt that the author, whose experience in this field must be almost uniquely extensive, has little to say about the practical problems of sampling for forest data. For example, in an earlier chapter (page 71) data are given which were obtained by examining five branches at random in each of seventy plots. Logically this should have been done after first numbering every branch on every tree to provide a sampling frame, but in practice one would expect that some less laborious procedure could have been found, and it would have been of interest to know what procedure was adopted.

In the chapter on chi-square, the main example given (testing a sampling spear technique by means of coloured seeds arranged in layers) is an unfortunate one, as it is impossible to formulate a physically reasonable null hypothesis which gives rise to a chi-square distribution. The chapter in regression analysis gives an adequate account of the work of fitting a simple regression line and calculating the correlation coefficient, though some may find the notation confusing in that $\bar{x}$ is the mean value not of $x$ but of X. A useful short-cut method of fitting a simple regression line is given later in this chapter. The reference to the probit transformation, however, is rather unhelpful; the use of probability paper (which is not mentioned) is likely to be the only aspect of this subject of much interest to the practical research worker. The suggested use of unweighted linear regression on empirical probits is not to be recommended, and the probit transformation is not likely to be of much use in cases where the saturation level has to be estimated from the data (as suggested on page 129).

The account given of covariance analysis has necessarily had to be drastically simplified in order to maintain conformity with the mathematical level of the earlier chapters. The usefulness of this chapter (Chapter 7) is marred by the fact that the example used is a rather special one. In a randomised block comparison of the working times involved in four different procedures for extracting thinnings, the volume of thinnings felled is used as a concomitant variable. In the preliminary variance analysis it is found that the volume of thinnings varied significantly between treatments (extraction procedures) but not between blocks. This result should immediately have caused the investigator to take a closer look at his data, and perhaps also at the sites involved, as it indicates that either the randomisation has not been properly done or that measured volume is in some way affected by the extraction procedure. If the former is the case then no valid statistical inferences can be drawn from the figures, while if the latter explanation is accepted then (as pointed out on page 139) covariance analysis will not be efficient. It is this rather special feature of the data that enables a straightforward result to be obtained. In a more typical case it would have been found that variation of the concomitant variable between blocks was as great as, if not greater than, that between treatments. For efficiency, estimation of the common regression coefficient would

then have to take into account the between blocks component of covariance and the analysis and interpretation would become appreciably more difficult. In any case it is hardly advisable to apply covariance analysis without including a check on the uniformity of the regression coefficient, and this aspect of the analysis is not covered.

The final chapter deals with presentation of the results of experiments. Its recommendations will be strongly endorsed by anyone with experience of this type of work.

The book could have been appreciably improved by more careful proof-reading. It is especially unfortunate that the first two worked numerical examples both contain printing errors; in Table 2a.1 the entry 1.91 under block 8 should read 0.91, while in Table 2b. 1 the entry 23.86 in the last column should read 25.86. The explanatory caption given under Table 2a. 6 actually belongs to Table 2b.1, three pages further on. On page 54, almost complete incomprehensibility is achieved by interchanging lines 21 and 23 and omitting two sections of tabular material. The printer is presumably responsible for the strange word "diagra" which appears in the caption to Figure 6.2; the same may possibly be true of "coveriate" on page 146 though the latter appears twice on this page.

In conclusion, this work may be of some value to a forestry research worker who already has some knowledge of statistical and experimental design theory and who wishes to have simple worked examples to follow relating specifically to his own field. The reader will soon find, however, that problems arising in practice will necessitate referring to a more advanced text. Moreover, even within the field covered, a critical attitude will need to be maintained.

F.M.O'C.

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# Annual Study Tour

*First Day.*

THE party assembled outside the Downhill Hotel, Ballina, at 9 a.m. on Tuesday, 31st May, 1960. Shortly afterwards the two buses left on the impressive journey to Glenamoy.

*En route* a halt was called between Ballycastle and Belderg to view the 400 ft. high carboniferous sandstone cliffs where huge faults, and holes worn by the sea could be seen. Those travelling on the first bus were provided with an excellent running commentary on their surrounding by Mr. T. Hunt.

At Glenamoy Research Station we were met by Mr. O'Hare and his staff. The President, Mr. Swan, then gave a short introductory speech, officially opening the 17th Annual Study Tour. The Convenor, Mr. A

M. S. Hanan, spoke a few words introducing Mr. O'Hare to the party. Mr. O'Hare, before showing us the various aspects of the farm, gave us a brief *resumé* of the history of Glenamoy Research Station.

Founded in 1953, its original function was the cultivation of bog-land for the production of grassmeal. Work started in April 1954 but in August 1955 a joint scheme under the Departments of Agriculture and Lands was introduced. Its objectives were:

(a) The establishment of a 100-acre experimental farm.
(b) The determination of inexpensive ways of increasing stock carrying capacity, and
(c) The production of various industrial crops for small industries.

Mr. O'Hare told us that work is also done at present for the Meteorological Office. The farm consist of 100 acres with 40 acres of shelter belt.

We were told that the first objective entailed sheep and cattle farming on soft swards (e.g. clover). A 40 per cent. loss of lambs was recorded in the sheep flocks to that there has been more emphasis on cattle farming. The all-important product was the animal and a system of bringing feed to the animal instead of vice versa was one of the problems being tackled. Drainage was the only way of dealing with the utilization of the soft land for swards. Mr. O'Hare said that the farm was now at the crossroads of policy as to whether sheep or cattle farming would be the final aim.

Regarding the second objective, seeding was found to be very successful.

The third objective entailed experiments in bamboo growing for the production of fibre. Mr. O'Hare informed us that the British Institute of Research discovered that the total yield of alpha-cellulose from an area of bamboo was greater than from an equivalent forest rotation. Three varieties were being grown. The method of harvesting was the Forage Harvester.

Before proceeding to the field and to the drainage experiments Mr. O'Hare gave us some data on the type of ground being tackled. The pH of Glenamoy ranged from 4.1 at the bog surface to 5.1 at the base. The moisture content was 92%. Led by Mr. Burke of the Institute Staff we then proceeded to the field. First the drainage experiments were seen. The first site consisted of two acres, one underdrained by plough having the run-off tapped by a flow recorder, the other not. The main drains were 100 ft. apart in the first acre with cross underdrains at 12 ft. intervals. The flow recorder was an essentially simple instrument consisting of a float in a water bath which rose and fell according to varying off-flow. The float marked a chart. The graph produced was read weekly and some of the water was analysed every day to determine mineral loss through drainage. Run-off was found to reach substantial

peaks in the area not underdrained with an equivalent loss of nutrients due to the fast run-off. There was no run-off peak in the drained area.

Various underdraining experiments were carried out, one for example of six different crops with different underdrain levels of 3 ins. to 30 ins. Another problem posed was how intensively the area could be under-drained without damage.

We viewed the plough for doing this, a very impressive piece of machinery which was evolved in 1959. The plough ejected the peat onto the surface and therefore could not in fact be called a mole plough. The model we saw had a hand lifting ram, but a hydraulic take-off was in the process of construction. The plough was made of $\frac{1}{2}$-inch metal sheeting but it was suggested that a lighter model would be adequate. The plough was able to go to a depth of 40 ins. and ejected a strip of peat 11 ins. $\times$ 15 ins. Its implications as regards forestry would appear to be great. Mr. Burke told us that experiments were carried out this year testing this new plough with a Cuthbertson and that it outweighed the latter in its advantages regarding labour and efficiency. The oldest drains cut by the plough were eighteen months in existence and showed no sign of closing. There was no limit to the theoretical depth at which the drains could be placed, although draining below 30 ins. was not advisable.

A discussion arose as to the cost of operating this plough and it emerged that, although the rate of travel was the same as that of the Cuthbertson, it could be drawn easily by one platypus tractor as against two required to draw the Cuthbertson. Another point that arose in the discussion was whether, once the area was drained, it would revert to its former "gluey" (gel) peat condition. We were told that experiments to test this were carried out, and it was found that this glueyness would never be regained.

We then proceeded to an experiment in water-table measurement with vertical pipes placed at 3 ft., 6 ft., 12 ft. and 25 ft. intervals from a main drain. It was noted that beyond 6 ft. there was no substantial drop in water level.

Finally in this series we observed an evapotranspiration experiment in which a 10 gallon drum with peat saturated with a known volume of water was used. Allowing for rainfall, syphoning off, and additions to maintain saturation in dry periods the difference in the amount of water at the end of the experiment gives a measure of the evapotranspiration from a saturated peat surface. It was pointed out by Mr. Burke that total evapotranspiration from a given surface was limited by the

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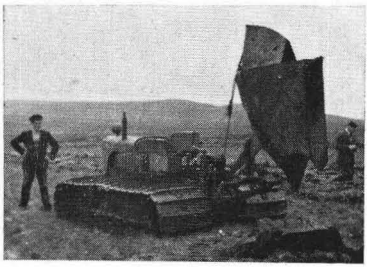
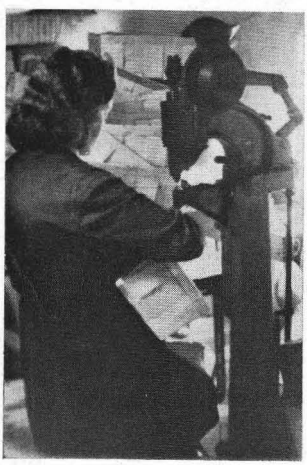
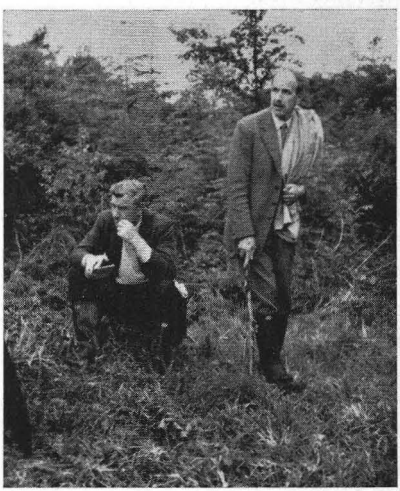
PHOTOGRAPHS. *Top left:* Experimental mole plough at Glenamoy. *Top right:* Examining contorta pine of Lulu Island origin in the shelter belt at Glenamoy. In the background can be seen the contorta of presumed Washington coast origin. *Centre:* The party discussing forestry experiments at Glenamoy. *Bottom left:* "Stitching" chip baskets in the Sligo factory. *Bottom right:* Convenor A. M. S. Hanan addressing the party in Lough Gill forest. Seated is Mr. M. MacNamara, Vice-President.







amount of energy falling on or received by the surface and that theoretically any complete vegetation cover was capable of yielding the maximum evapotranspiration. Therefore grass crops might get rid of as much moisture as a tree crop. Surface root crops die out so therefore do not maintain an evapotranspiration surface as does a tree crop.

This finished our tour of drainage and related experiments and we proceeded to another area where we looked at shelter belts and fertilizer experiments. The 40 acres of shelter belts comprised an outer belt on the exposed edge of 4 rows of contorta pine, a middle belt of 3 rows of Sitka spruce and an inner belt of 3 rows of Sitka spruce, contorta pine and hybrid larch. The area was plough drained with drains 10 ft. apart and ribbons at 5 ft. 1½ oz. of ground mineral phosphate had been applied at time of planting in 1956. The original intention was that the outer (exposed) edge of the belt should consist of mountain pine, but contorta pine had been supplied in error and it was now apparent that these were more vigorous than the contorta in the inner part of the belt. This difference was discussed and was generally ascribed to provenance; the outer rows, supplied instead of mountain pine, being probably the progeny of old stands of contorta pine grown from seed originally imported from the coastal districts of Washington, U.S.A., as compared with the inner belt which was known to have been raised from seed supplied from Lulu Island, British Columbia.

We adjourned from the shelter belts to experiments conducted by Mr. D. Collins on seeding of grass mixtures and fertilizing. The first experiment we were shown demonstrated the necessity of liming. We were also informed of experiments carried out on clover crops with the addition of lime and various types of phosphate. It was found that ground mineral phosphate, although more effective than no treatment, was not satisfactory, and that superphosphate was a better form in which to apply phosphate fertilizer in conjunction with lime. In another experiment a response in clover to ½ lb. of molybdenum per acre was seen.

In the following discussion one of the reasons given for the poor response to G.M.P. was that the lime neutralises the soil and inhibits the liberation of available phosphorous, so that G.M.P. should only be applied under acid conditions. To end the fertilizer and seeding experiments we saw an experiment in large-scale surface seeding.

We were told that by these experiments it was hoped to show that the lot of the residents of the western bogs could be improved by draining and seeding ¼ million acres of bog. The cost of the whole operation, including establishment of sward and drainage, would be about £10 per acre.

Having seen the agricultural side of Glenamoy we returned to the personnel buildings where we enjoyed a wholesome pack lunch provided by the hotel, ably added to and very kindly served by the Glenamoy staff.

We took the field again after lunch and proceeded to Glenamoy

research forest where we were shown a number of experiments by Mr. O. V. Mooney, Research Officer. Mr. L. Condon, District Inspector, opened the proceedings by welcoming us to the forest. He told us that the running of this forest was a joint responsibility between Research and Management Staff. In treating Glenamoy as a working forest the management staff were aiming to produce a crop of timber, possibly of pulpwood type.

The plantation lay on an area of blanket bog with a natural vegetation consisting mainly of *Eriophorum* spp. and *Schoenus vigricans.* The bog, ranging in depth from 4 ft. to 24 ft. overlay gneiss and mica-schist. The climatic factor was critical. Mean annual rainfall (48?) ins.; relative humidity (80%?); mean wind velocity 17.5 m.p.h.

Mr. Mooney told us that the area was originally acquired in 1955, and since 1956 an annual planting programme has been carried out. Up to the present 500 acres has been planted. He told us that the whole of Glenamoy was planted as an experimental plot and as yet there was no real knowledge as to its success. This forest was to be a pilot plot as to what the possibilities will be on similar ground, e.g. at Bangor Erris, Crossmolina, Nephin and Blacksod. The Forestry Division needed a preview of what would happen in these areas.

We saw first an experiment in which acre plots of different species had been sub-divided for different applications of G.M.P. These were at the rates of 3 oz., 2 oz. and 1 oz. per plant with unmanured controls. The species involved were Sitka spruce, contorta pine, maritime pine, Japanese larch, *Abies procera,* and *Picea omorica* with two further plots of mixed contorta pine and Sitka spruce, one of these being undrained and the other having been planted with 1-year seedlings. The most promising species were contorta pine, Sitka spruce and *Abies procera.* Data for survival and growth were given and it appeared that an application of phosphate was necessary though the amount applied did not, as yet, seem to be of importance. Mr. O'Hare mentioned the comparison of applying phosphate eevery year and alternate years. He said that 2 cwt. per annum was more effective than 4 or 8 cwt. in alternate years.

We visited a demonstration where year old Sitka spruce muched with the spoil from drain deepening in July 1958 had responded to the extent of a 73% increase in growth compared with unmulched controls the following year.

The last experiment visited was one planted in 1958 to compare 12 coniferous species. An interesting point here was the continuing mortality among the *Pinus radiata,* due, it was assumed, to severe climatic conditions.

Having finished our tour of Glenamoy forest we again boarded our buses and travelled through miles of bogland stopping off to look at a small plantation on the Bord na Móna property at Bellacorick. The plantation consisted of mixed *Pinus radiata* and *P. contorta* and of these

almost all of the *P. radiata* and 4½% of the contorta had died recently although they had been growing well since 1950. Suggestions put forward to account for this included frost and wind damage, salt winds, or a combination of atmospheric conditions and salt.

We completed the final stage of our day's tour and returned to dinner at Ballina before moving on to Sligo for the night.

G.J.G.

*Second Day, 1st June.*

The second day of the tour was devoted entirely to the recently acquired Rockingham estate woodlands, near Boyle in Co. Roscommon. The estate, which has been joined for management purposes to Ballyfarnon Forest Centre, comprises 857 acres in two blocks, and consists mainly of old broad-leaved high forest with some conifers on peat areas.

At the first stop we viewed some poplars in the rain. Here Mr. Johnston began by giving us a short account of the soils of the area. The mineral soils are derived from limestone giving a structureless red clay, through which drainage was almost nil. This was emphasised by the occurrence of swamp vegetation even on top of knolls in open fields. The best tree crops on the estate were to be found on the mild peats which occurred here and there.

We returned our attention to the poplars—3 year old black Italian and not growing well. We looked into a soil pit and saw the gley characteristics. Some confusion arose at this point over the soil reaction which was determined on the spot by means of an indicator, and reported variously as pH 4-5 and pH 7-8. Mr. McEvoy pointed out that the vegetation supported the latter value. A discussion followed on methods of establishing poplars and their site requirements.

The next stop was in a mixed stand of Norway spruce, European larch, ash and sycamore where 7,800 H. ft. per acre was carried on 253 stems. We were shown a felled larch 103 ft. high with a volume of 58 H. ft. Its age was 75 years and its ring pattern showed that it had grown at a very fast rate in its early years. The proposed action here was first to remove the trees suitable for transmission poles and to sell the remainder standing.

Mr. Condon here gave an indication of the proposed treatment for the different types of crop on the estate. Broad-leaved high forest with some conifers would be accepted and an attempt made to improve them by cutting and introductions. Mature conifers would be clear felled and the areas re-stocked. Scrub hardwoods where the stand elements could not be accepted as a basis for improvement would be removed and replanted except where their retention was necessary for amenity purposes, e.g. on the lake shores.

Butt rot, we were told, was universal in stands on mineral soils; less so on peats.

Mr. Johnston gave an account of the position of the estate as a bird

sanctuary. It had carried a heavy stock of game, and intensive management had eliminated vermin. The grey squirrel had been absent until recently. He imaged for us the sight of a black-backed gull flying in across the lake, and shortly afterwards a squad of game-keepers emerging with rifles to stalk and destroy it.

We next visited the remnants of an 81 year old stand of *Thuja plicata* whose utilization was discussed. We were urged to take advantage of the new fashion for timber cladding on buildings and it was suggested that we might be more successful in our attempts to compete with the imported material if we stopped calling it Thuja and referred to it instead as western red cedar, its common name in America. The problem of butt-rot was raised and Mr. Johnston pointed out that the high quality timber was on the outside of the tree, and put forward for consideration the hypothesis that the rot was confined to the juvenile timber laid down before the tree reached the age of about 20 years, and that in fact as the tree grew older the proportion of decayed timber it contained was reducing. If this could be established there might be a case for growing *Thuja* on long rotations.

We passed on then to view two single specimen trees: a Sitka spruce 110 ft. high with a quarter-girth at breast height of 28½ ins. and an assumed volume of 220 H. ft., and a grand fir (*Abies grandis*) 127 ft. high with a quarter-girth of 40¾ ins. and an assumed volume of 440 H. ft. The ages of the trees were not known but it was quite possible that they were the same.

The next discussion concerned the treatment of a young crop of natural ash. Many thought that selection of the crop trees should be deferred until they reached a quarter-girth of 3 to 4 ins., but Mr. Mooney thought it should be done now.

Having passed through a pleasant pale pink to deep red display of *Primula japonica* now growing wild in the woods we were presented with a problem. In an old conifer stand groups of trees bore old lesions, all on the side of the tree facing towards the centre of the group. The bark on the affected sides was loose and the cambium dead. The only cause which seemed to fit all the effects was fire. Indeed after a diligent search pieces of charcoal were found near the centre of one group. It was assumed that large piles of branchwood had been burned in the stand at some time during its history and as a result the commercial value of many of the remaining trees had been greatly reduced.

After lunch, which was taken in the Royal Hotel, Boyle, we assembled before an area carrying only a sparse crop of young alder. The question for consideration was whether this alder should be retained in restocking the ground with conifers. This led to a discussion of the whole question of the rôle of hardwood admixtures in coniferous plantations. The view was put that there was little advantage to be gained by such admixtures that could not be obtained by the application of lime and artificial fertilizers, and that the silvicultural difficulties and

the economic loss following the use of hardwoods were strong arguments in favour of the latter course. This might not, however, be the case with alder which gave a continuous supply of nitrogen, often the limiting factor, provided that the amount made available was sufficient for the needs of the coniferous crop. The commercial uses of alder timber were also discussed.

Mr. Johnston called our attention to an outcrop of limestone carrying a tree crop, the roots of which had explored the fissures in the rock for a considerable depth. Only the thinnest covering of soil was present —a mixture of clay and organic matter with no gritty material.

Our last stop was at a stand of Scots pine with an impassable understorey of *Rhododendron* the eradication of which we were asked to discuss. It was agreed that it must be removed, and that a mechanical approach would probably be more economical (a figure of £30 per acre was mentioned for hand cutting) and the stumps and young growth treated with a weedicide.

After alfresco tea we re-embussed and to view the scenic attractions of Lough Key and Lough Arrow we returned by a circuitous route to Sligo and the Society's Annual Dinner.

N. O'C.

*Third Day, 2nd June.*

On the third day of the annual Study Tour our Society visited Hazelbrook Property of Lough Gill Forest where we were welcomed by Mr. Campbell, the Forester in Charge. Mr. Condon gave a brief outline of the history of the Property since its acquisition in 1939-40. The Property which contains 1,750 acres is situated on the slopes overlooking Lough Gill in a district which is sometimes described as the Killarney of the North West has been managed since acquisition with a view to combining the preservation of the scenic amenities of the area with good forestry. A wide variety of species were used including Norway spruce, Sitka spruce, Scots pine, beech, Japanese larch, *Abies nobilis, Abies alba, Tsuga* and *Chamaecyparis Lawsoniana.*

During our tour of the woods we got some excellent views of Lough Gill and its beautiful Islands which Mr. Campbell named and gave us points of local and legendary interest concerning them.

Mr. Mooney remarked on the satisfactory growth of Scots pine in the Property and pointed out remnants of old Scots pine stands which contained timber of good quality. Mr. Condon referred to the difficulty of establishing Sitka spruce on old hardwood areas where *Calluna* had grown so vigorously that it deprived the spruce of sufficient water and soil nutrients and caused it to go into severe check. Mr. McEvoy said that the *Vaccinium-Luzula* vegetation of old woodlands was sometimes mistakenly accepted as indicating a good spruce site but after the removal of overhead shade an invasion of *Calluna* was liable to occur before the spruce crop was established and lead to considerable trouble. Mr. P. Kelleher advocated the more intensive use of *Abies nobilis* on

such sites. Messrs. Mangan and Mulloy spoke in favour of Japanese larch and supported their arguments by quoting examples of excellent crops of that species growing under similar conditions. Mr. Condon invited suggestions as to the best way of treating the spruce which had gone into check and Professor Clear suggested that the most economical way of helping the spruce might be the planting of Lawson cypress at 20 ft. spacing. Lively discussions were still in progress when the Convenor had to draw our attention to the time and the party returned to Sligo where we visited the premises of the North West Chipboard Company.

The establishment of a Chipboard industry in Sligo is mainly due to the initiative of Mr. Higgins, the Managing Director of the Company. This is the only industry of its kind in Ireland and before establishing the factory Mr. Higgins studied the technique of chipbasket making overseas. The factory is now in full production and provides employment for 15 men and 35 girls and has a weekly output of 200 gross of 12 lb. chips and 200 gross of punnets. They are purchased by fruit and vegetable growers in Ireland who formerly had to import their requirements. Until recently the timber used in the factory was imported, but as a result of tests made with home grown timbers Mr. Higgins is satisfied that he can make baskets of high quality from clean butt lengths of Sitka spruce and poplars grown at home and he is changing over to that material. Four cubic feet of round timber is used in the production of one gross of 12 lb. chips and one cubic foot of round timber produces six gross of punnets. Our President, Mr. Swan congratulated Mr. Higgins on his enterprise and thanked him for showing us over his factory.

On Thursday afternoon we visited Ben Bulben a property of 206 acres acquired over the past 5 years.

Mr. Condon conveyed the apologies of Mr. Delaney, the District Inspector, who was unable to be present due to pressure of business elsewhere. Mr. Condon said that the area was typical of North Leitrim —its distinctive soil, known locally as Leitrim daub, is a grey hydromorphic soil of carboniferous origin which presents its own peculiar problems as a soil with which Irish foresters have had little previous experience. The site presented little difficulty at the establishment stage, and the real problem which confronted the Forester concerned the wind firmness of the crop. Due to the retentive nature of the soil drainage was extremely difficult. Sitka spruce tended to be very shallow rooting and the danger of wind throw was very great. He believed if the rooting depth could be increased this type would offer the best Sitka spruce sites in the country.

Mr. Johnston estimated that there was 22,000 acres of Leitrim daub in the district. He agreed with Mr. Condon about the danger of wind throw and said that trees in established forests were shallow rooting and he feared that as well as the wind throw risk there was a danger of severe damage being caused to the tree roots during thinning operations,

particularly if thinnings were removed by skidding. He would like to see a wider variety of species used and suggested *Tsuga* and *Thuya* as species which might do well.

Mr. P. Kelleher suggested that a closer network and shallower drains, say 1 foot deep, might be more efficient than the more widely spaced deeper system.

Professor Clear drew attention to the wide cracks which occurred at the drain edges and suggested that with a closer drainage system the cracks might be helpful in improving root penetration. He thought that alder in intimate mixture with the spruce might have a beneficial effect. He added that the site type would justify a really intensive study as it was potentially a first class spruce site.

Dr. Murray said that at the Kells Ingram Farm on a Carboniferous site where the profile showed the same mottling as was apparent here, oak failed to find sufficient rooting depth and blew over.

The day concluded with a scenic drive ending with a short stop in Glencar overlooking the waterfall and wooded slopes of this beautiful valley. Here our President formally concluded our study tour and thanked all those responsible for its success.

M. McN.

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# Annual Dinner, Sligo, 1st June, 1960

*President's Address.*

MY first duty is to thank the Mayor of Sligo, Counsellor Tolan, for coming here to-night to lend the dignity of his office to our annual function. As Mayor he is a very busy man with heavy demands on his time and the Society are deeply appreciative of the fact that he has deemed our visit as an occasion worthy of his presence as the elected representative of Sligo and its first citizen. This is our second visit here and we have happy memories of the hospitality and kindness we received just 12 years ago. On this occasion as well as the same unfailing kindness and hospitality we will have the happy memory of the high honour bestowed on our Society by the Mayor and we are very grateful to him for it.

A special word of thanks is due to Mr. Pat O'Hare and his staff at the Agricultural Institute's Research Station at Glenamoy. A visit to an Agricultural Research Station may, at first, have seemed an unusual start to a Forestry Study Tour but judging from the discussion it provoked and which still seems to be going on there is no doubt whatever that it was an unqualified success. We found that they are faced with many problems very similar to our own and that there is much we can learn from them and the results they have achieved. We

hope our visit may have helped them a little but there is no doubt that in the exchange of information we were the gainers.

A Study Tour like ours extending over several days and involving a party of over sixty people requires a considerable amount of organisation and hard work. We are indebted to our Convenor, Mr. Tony Hanan, and his very capable committee—Miss Furlong—for the competent and comfortable arrangements made on our behalf. To Mr. Liam Condon has fallen the brunt of the planning within the forest and he has been ably assisted by Mr. Johnston and Mr. Curran. In the background because they are as usual shy men and very much inclined to hide their light under a bushel we find the Foresters without whose active help and co-operation our Study Tour could not be a success. To all these people the best thanks of the Society is due for a very instructive and most enjoyable tour.

The emphasis in our Study Tour and in fact in our activities in general has been on the growing of trees. The forester usually considers this as his main objective and seldom looks beyond it. He generally leaves the marketing and the ultimate uses of the crop he produces to others. In this, I believe, he is wrong. He should also concern himself with the marketing and the final use to which his timber is put.

Since timber is a very variable material, no two pieces are exactly the same, a prerequisite of successful marketing is some form of grading and I wish to-night to make a plea for stress-grading as the best answer.

Let us just see what usually happens when an engineer or structural designer wants to use timber. Because of the almost complete absence of any system of grading or of any data for his material he must himself make a few crude tests and from his scanty results compute averages for the various strengths he wants. Then noticing that no two pieces of his material are the same as to knots splits and shakes and so forth he divides his average by a safety factor to get his permissible stresses. The factor he uses is entirely subjective and is his own personal assessment of the variability of the timber and the degree of hazard to life and limb and of course to his reputation if the structure should collapse. The result is he usually winds up with a much more costly and bulky structure than he really needs and one which is very prodigal in its use of timber. In other words there is a lot of guess-work in our use of timber, guess-work which is both unnecessary and undesirable.

How can we help him to take the guesswork out of his calculations. The answer is to grade our material according to visible defects into categories capable of bearing predetermined stresses, in other words stress-grading. Stress-grading is a comparatively new science, at best not more than twenty years old, so we still have a long way to go. Briefly the procedure in the preparation of stress grading rules is to test sufficient material in structural sizes and containing defects carefully listed and tabulated, to determine accurately the influence of these

defects. A safety factor of 27/64ths is used to give allowable working stresses for the grade and the mathematical probability that one piece in 40 would fall below the working stress allowed is accepted. The result is a grading according to species and defects into categories capable of withstanding certain predetermined loads. If the material is of poor quality or unsuitable species the bulk required to withstand the load will be much greater than would be necessary for clean and suitable material so that this system of grading automatically allows a price differential for the better quality material or more suitable species. It also ensures the best and most economical use of the material available; and lastly it provides the engineer or designer with accurate and reliable figures on which to work.

To conclude I would like to say a few words on timber preservation. Anything we can do to prevent or retard insect or fungal attack lengthens the life of our timber and helps to conserve our limited supplies. When we think of preserving, however, we usually think of complicated pressure processes with high capital costs, high running costs and capable of handling only comparatively small loads at a time, so that the preserving of all our timber appears as an enormous and wellnigh impossible task.

Now there are two situations in which our timbers may find themselves. The first is in open or exposed positions subject to constant wetting, or in contact with the ground, or immersed in water. For these positions pressure treatment is a necessity. The second is in sheltered or protected positions and under this heading comes the bulk of our timbers particularly our structural timbers. For such positions the much simpler and more inexpensive method of diffusion impregnation has been developed. For this method no more elaborate equipment than a dipping tank is required or if desired, the preservative may be brushed or sprayed on with equal effect. The method is to surface coat the timber with a solution of the preservative and allow the moisture in the timber to carry the preservative right through the wood. The one essential is that the timber must be green when treated. When the required penetration has been achieved the process is stopped simply by drying or seasoning either by air or in the kiln.

This method then is simple and inexpensive and penetration is right through the wood and not as a protective skin so that it may be machined, cut or bored at will after treatment. It is applied to the green timber thus eliminating the need for second drying and it is effective against most insects and fungi likely to be met with in this country including woodworm and dry rot. I would like to see this or some similar form of preserving applied to all our native timbers as a matter of course.

This year the Forestry Division has achieved a planting target of 25,000 acres. When the Division comes to market the timber from planting on this scale Ireland will be in competition with countries with a long forestry tradition behind them, who have always had timber to

sell and who know just how to go about selling it. We know little about our timbers, their properties or defects and we have no experience of a highly competitive timber market. The time is short, it is well within the lifetime of most of us here and we cannot afford delay. Some form of grading must come and to my mind stress-grading is the obvious and most beneficial one, while a preserved timber will always have an enhanced value in keeping with its longer life expectations.

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# Ecological Excursion

THE party gathered at the head of Glencree Valley and set out in rather threatening weather. The first stop was at Ballyreagh property of Glencree forest where Mr. McEvoy gave a *resumé* of the ecology of the area, and traced with the aid of maps its ecological history over the past 120 years and the striking reversion of agricultural land to bracken. Assessment figures indicating timber volumes which have been obtained from bracken areas were supplied by Mr. G. Gallagher. The party then moved into the forest to examine stands growing on what was once typical bracken slope.

The group then moved on to Kippure mountain where, by kind permission of the Wicklow County Manager, entry was allowed onto the new "Television" road leading to the summit. A fine example of *Tricophorum* bog was observed under typical climatic conditions—strong wind and driving rain and fog, at 2,000 ft. elevation, and the characteristic growth of *Rhacomitrium* mosses on these very exposed bog edges was seen. The awesome journey was continued to the summit (2,500 ft.) and satisfactory parking space was found for all cars on the denuded granite gravel of the mountain top. Here was seen very clearly the ravages of the elements and the resulting peat erosion where isolated patches of *Calluna* cling precariously to hummocks of peat, and the dwarf cushions of *Agrostis* and sorrel growing on the bare granite material.

Due to an unfortunate deterioration of the weather our next stop had to be cut short and a proposed visit to an *Eriophorum* moor, and a *Calluna-Molinia* moor (now planted with Sitka spruce and contorta pine) had to be abandoned.

The last stop was made at the juction of granite and glacial drift at Killakee (1,250 ft.).

The day was wound up with a pleasant meal well sheltered from the elements at Miss Fox's. The President proposed a vote of thanks.

G.J.G.

# Excursion to Mullingar Forest

ANNUAL holidays, bad weather and football were some of the factors which caused the party, which met at Ballymacarrigy on Sunday, 21st August, to be small. Those that did turn up had, however, an enjoyable and interesting afternoon in Baronstown Demesne Property of Mullingar Forest.

At the first stop, Mr. Joyce, leader for the day, started a discussion on the relative merits of under-planting or clear felling with particular reference to damage caused by extraction of the over-storey, following under-planting.

Comparisons were then pointed out between oak growing pure (following removal of 50% J. L.) and oak growing in mixture with N.S. The Norway spruce, of Dutch origin, measured up to almost Quality Class I, while at the same time leaving room for a high proportion of clean oak, also Dutch. This oak, which is about $4\frac{1}{2}$ inches B.H.Q.G. and 20 ft. to timber height, at 23 years, has been severely affected by grey squirrels, which appear to cause more severe damage on the young shoots following opening up of the crop by removal of the spruce. A discussion followed as to the best means of mixing oak with conifers, Mr. Mooney favouring two or three lines of pure oak, between pure N.S. Others preferred groups of various sizes or the intimate mixture as demonstrated by this plot.

At the next stop talk ranged mainly around the question of producing "quality" timber, as well as quantity. The President, Mr. Swan, mentioned the setting out of grading rules which have fixed limits as regards ring-width (not less than 4 per inch) and the number and size of knots allowable per foot-run of board. The Norway spruce in this plot was also Quality Class I but very little remains of the oak which had been put in, in the traditional group system, the groups being 20 feet apart.

The stand which was demonstrated next, proved to be the most controversial, consisting of pure beech planted 22 years ago at 5 ft. × 5 ft. on the site of an old walled garden. The soil is a deep brown-earth with humus darkening the top 12 inches, and with pH ranging from 6.25 in the surface layers to 7.8 at about 21 inches down. The site, which, to a forester, would appear almost ideal proved to be a big disappointment after 22 years. The beech are mainly of very poor quality, 50% could be written off as having no future and, of the remainder, only a very small proportion could be selected with any hope of producing clean timber lengths. The roughness and stagheadedness of the crop provoked many ideas ranging from wide spacing to squirrel damage and led on to the somewhat depressing subject of the economics and desirability of growing hardwoods in Ireland.

The last point of interest prepared by Mr. Joyce was a deep soil-pit in an area subject to frequent deep flooding by the River Inny, as it passes through Lough Iron. It is understood that a new drainage scheme

may lower the level of Lough Iron by about 7 feet thus making available, for planting, a large area of this type. The pit showed up to 3 feet of a rich dark brown fen-peat with a surface pH of 6.3, the remainder having a pH of from 6.7 to 6.8. Vegetation is mainly *Spiraea* with an over-story of alder but it was considered that this type of site might prove ideal for poplars given plenty of side-light.

The rain which had held off all afternoon started falling as the party adjourned and fell steadily for the rest of the evening. However, a large oak tree provided enough shelter for the members to enjoy a tea-break before starting for home.

In concluding, the President thanked Mr. Joyce for his careful preparation for the excursion and also Mr. Reidy, the Forester-in-Charge, who accompanied the party throughout, providing a lot of interesting information regarding his Forest.

A.M.S.H.

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# Excursion to Durrow Forest

THE excursion to Durrow Forest, Co. Laois, was attended by members from areas as far afield as Galway, Waterford and Dublin. The party was welcomed by the President, Mr. Swan, and by Mr. D. Hayes, who represented the Minister for Lands. A short history of the property was given by Mr. Hayes who explained that the area carried a crop of hardwoods, mainly beech, in which it was proposed to carry out regeneration felling. Unfortunately the storm of 1957 intervened when only a limited amount of regeneration had taken place.

The leader for the day, Mr. McNamara, skilfully steered the discussion which followed into the economics of beech growing in comparison with conifers. The general opinion was that to grow beech economically the price would require upward adjustment. Along the route reference was made to the high quality of the beech and the absence of butt rot.

Leaving the beech we were introduced to a Norway spruce stand growing on sandy loam. In the original planting 25% oak groups were introduced only to be completely suppressed by the spruce. Mr. T. McCarthy remarked that this is a rather common occurrence and that the oak should be relieved at 10 to 15 years if it is to survive. Mr. Hayes was of the opinion that oak does better in lines than in groups. Mr. Mooney concurred and considered that on this particular site ash would have been a better choice than oak to compete with the spruce.

We were now directed to a Scots pine stand which in comparison with the spruce looked poor, but still managed to compare favourably with Quality Class I of the B.F.C. Yield Tables. Again the question of economics in the growing of Scots pine was introduced, but although comparison with spruce was futile on a volume basis, it was agreed that

the demand for P. & T. poles might offset to some extent the relatively low volume production.

A unique feature of the excursion was a competition in the ocular estimation of volume of two poplars. This was won by Mr. Hanan whose estimate was within 2% of the measured volume. Mr. Hayes presented the prize.

Following an enjoyable tea in the open Mr. Swan thanked everybody for attending and remarked that we were much too prone to compare volumes of conifers at 50 years with those of hardwoods at 100 years, sometimes forgetting that the criterion is the values of the different timbers. He expressed his opinion that the price of beech would influence its planting.

P.M.J.

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# Excursion to Townley Hall

Despite about 24 hours of torrential rain, and indications that as much more would probably follow, about 20 members and friends assembled at Townley Hall on the Kells Ingram Farm between Slane and Drogheda on Sunday, October 2nd, 1960. The visit was arranged by Dr. N. Murray by kind permission of the Kells Ingram Farm Management Committee of Trinity College Dublin. An outdoor programme was out of the question, so having been shown through the elegant building (designed by Johnston, who was also responsible for the Dublin G.P.O.) we assembled in the library where Dr. Murray gave a short account of the forestry activities on the estate—mainly scrub clearance and drainage prior to planting—and showed a series of colour slides depicting the actual operations. The President, Mr. Swan, thanked those who had made the visit possible and in particular commended Dr. Murray's foresight in having an interesting alternative indoor programme.

N. O'C.

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COVER PHOTOGRAPH. Our cover shows the experimental mole or underdraining plough which is under development at the Agricultural Institute's Peatland Research Station at Glenamoy, Co. Mayo. The plough produces a closed drain at a depth of about 3 ft. and also provides a ribbon of peat on the bog surface. It has recently been used in afforestation experiments. (See also report on first day of Study Tour).

# Annual General Meeting, 1960

THE Eighteenth Annual General Meeting of the Society of Irish Foresters was held in the Shelbourne Hotel, Dublin, on Saturday, 19th March, 1960.

1. *Minutes.*

The Minutes of the Seventeenth Annual General Meeting, having been published in the Journal, were taken as read and were adopted and signed.

2. *Report of the Council for 1959.*

The new Council met at 85 Harcourt Street, on Tuesday, 13th January, 1959, Thirteen members attended.

The meeting made preliminary arrangements for the Annual General Meeting. Sub-Committees were appointed as follows: Editorial, Finance, Meetings, Forestry Course and Diploma.

A proposal to hold a machinery Field Day was considered and a sub-committee appointed to consider the matter.

The Council met again at 85 Harcourt Street on the 17th February. Eleven members attended.

Final arrangements were completed for the Annual General Meeting. The Annual Study Tour in Denmark was considered and the date for the Machinery Field Day was fixed for the 16th May, 1959, at Kilruddery, Co. Wicklow. A programme of local excursions was arranged.

The third Council Meeting was held on Monday, 20th April, 1959, at 85 Harcourt Street. Eleven members attended.

Matters attended to included, Field Day arrangements, Local Excursion, Annual Study Tour, Forestry Diploma and the publication of the Journal.

The fourth meeting was held on Monday, 28th September, 1959, at 85 Harcourt Street. Ten members attended. Arrangements were made for the holding of a meeting in November at which a paper on "Soil Survey in relation to Irish Forestry" was read. The Society's Badge was considered. A large volume of routine business was dealt with.

The fifth meeting of the Council was held on Wednesday, 11th November, 1959, at 85 Harcourt Street. Arrangements were made for the election of the Council for 1960. Preliminary arrangements for the Annual General Meeting were put in train.

The sixth meeting of the Council was held on the 8th December at the offices of Kevans & Sons, 31 Fitzwilliam Place. The Committee considered the question of securing the services of a secretarial firm. The arrangements for the Annual General Meeting were further considered. The convenor of the Diploma Committee reported that a draft report had been prepared and would be submitted in due course.

The Council can point to many notable achievements in 1959. The Machinery Field Day was a new venture and was an outstanding event. The most successful Study Tour to Denmark has been fully recorded in the Journal.

While the number of enrolments to membership was well up to that of recent years a number of resignations and the considerable arrears in payments of subscriptions has resulted in a drop in income. This fall in income at a time of rising costs is a matter of some concern and members in arrears are asked to pay up in good time.

Two issues of the Journal appeared during the year. **The Council takes this opportunity to appeal to members to contribute material to the Journal.**

The Financial Statement which has been circulated to members has been prepared as usual by our Hon. Auditor, Mr. D. M. Craig, who has been an unfailing source of help to the Council during the year.

**There was a very full** programme of meetings during the year and attendances were excellent. The Council wishes to take this opportunity to commend the efforts of the local officers whose co-operation has been so valuable in making the day excursions a success.

3. *Abstract of Accounts for 1959.*

The statement of accounts, as published herewith, was adopted.

4. *Outgoing President's Valedictory Address.*

Ladies and Gentlemen,

In conforming with the requirements that the outgoing President of the Society delivers an address on this occasion annually, I intend to take up less of your time to-night than I did twelve months ago.

*World Forestry.*

Firstly, in regard to the world forestry picture, I have again referred to the latest F.A.O. Report, which covers the period up to the end of 1958. The following are the main facts which emerged: —

(a) The harvest of timber from the forests of the world increased from 1,663 million $m^3$ in 1957 to 1,664 million $m^3$ in 1958. Fellings of saw and veneer logs increased, while those of pulpwood, pitprops and fuel wood declined.

(b) The largest volume felled was in North America, followed by the U.S.S.R. and Europe.

(c) World output of sawnwood increased by about 2% from the previous year.

(d) Production of wooden railway sleepers in Europe decreased. Broad-leaved species slightly exceed conifers for this purpose.

(e) Plywood production reached a new record level of almost 13 million $m^3$ (an increase of 1.2 million $m^3$ on 1957).

(f) Pulpwood production of 50.22 million tons declined slightly from the 1957 figure. There was a decrease in North America and Europe and an increase in the U.S.S.R. and Asia.

(g) Newsprint production declined for the first time in 10 years, the fall being about 1½% to a figure of 12.14 million tons.

(h) Fibre-board, paper-board, particle-board and paper, other than newsprint, all increased their production.

*Forestry in Ireland.*

Coming now to forestry at home, I have some figures relating to the State Forest Service: —

The number of forests being administered by the Department of Lands in March, 1960 was 178, occupying a total area of 413,043 acres (at 31/12/59). Total productive area was 354,927 acres and the toal planted up to the 31st March, 1959 was 280,231 acres. The planting programme for 1959/60 is 25,000 acres, a target which has been aimed at for many years, and which, it is now expected, will at last be achieved.

The proportions of the different species used in the Department's plantations in recent years were:

| | 1958/'59 | 1957/'58 | 1956/'57 |
|---|---|---|---|
| Sitka spruce ... ... | 47.5 | 43.2 | 40.0 |
| *Pinus contorta* ... | 26.4 | 30.2 | 31.2 |
| Norway spruce ... | 9.4 | 9.0 | 9.5 |
| Other conifers ... | 13.1 | 14.6 | 13.9 |
| Broadleaved trees ... | 3.6 | 3.0 | 5.4 |

As will be seen, there is a steady rise in the proportion of Sitka spruce as compared with contorta pine, arising out of mixtures of these two species.

The area of land acquired in the first nine months of 1959/60 was 19,595 acres. The average area acquired during the previous 5 years was roughly 21,700 acres annually.

# SOCIETY OF IRISH FORESTERS

## Statement of Accounts for Year ended 31st December, 1959.

| 1958. | | | Income | | | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| £490 | 10 | 0 | To Balance from last Account | | | | 351 | 13 | 7 | | | |
| £30 | 9 | 3 | Less amount due to Secretary | | | | 7 | 2 | 8 | | | |
| | | | | | | | | | | 344 | 10 | 11 |
| £460 | 0 | 9 | | | | | | | | | | |
| | | | ,, **Subscriptions received :—** | | | | | | | | | |
| | | | 6 | Technical Grade 1 | | 1958 | 6 | 0 | 0 | | | |
| | | | 36 | ,, | ,, | 1959 | 36 | 0 | 0 | | | |
| | | | 3 | ,, | ,, | 1960 | 3 | 0 | 0 | | | |
| | | | 1 | ,, | 2 | 1956 | | 10 | 0 | | | |
| | | | 4 | ,, | ,, | 1957 | 2 | 0 | 0 | | | |
| | | | 21 | ,, | ,, | 1958 | 10 | 10 | 0 | | | |
| | | | 78 | ,, | ,, | 1959 | 39 | 0 | 0 | | | |
| | | | 5 | ,, | ,, | 1960 | 2 | 10 | 0 | | | |
| | | | 1 | Associate | | 1957 | | 15 | 0 | | | |
| | | | 11 | ,, | | 1958 | 8 | 5 | 0 | | | |
| | | | 86 | ,, | | 1959 | 64 | 10 | 0 | | | |
| | | | 2 | ,, | | 1960 | 1 | 10 | 0 | | | |
| £206 | 7 | 0 | | | | | | | | 174 | 10 | 0 |
| £6 | 5 | 0 | ,, **Interest on Investments** | | | | | | | 6 | 7 | 6 |
| £280 | 15 | 5 | ,, **Journals sold and advertisements** | | | | | | | 202 | 0 | 2 |
| £15 | 0 | 0 | ,, **Donation, Irish Forest Products Ltd.** | | | | | | | | — | |
| £21 | 16 | 11 | ,, **Excursion Account** | | | | | | | | — | |
| | — | | ,, **Field Day receipts** | | | | | | | 44 | 2 | 0 |
| £990 | 5 | 1 | | | | | | | | £771 | 10 | 7 |

| 1958. | | | Expenditure | | | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| £76 | 12 | 11 | By Stationery and Printing ... | | | | | | | 60 | 13 | 2 |
| £393 | 9 | 3 | ,, Printing of Journal ... | | | | | | | 211 | 19 | 0 |
| £51 | 5 | 4 | ,, Postages ... ... ... | | | | | | | 46 | 2 | 7 |
| £103 | 0 | 8 | ,, Expenses re meetings ... | | | | | | | 33 | 10 | 9 |
| £1 | 1 | 0 | ,, Bank Charges ... ... | | | | | | | 1 | 5 | 2 |
| £15 | 0 | 0 | ,, Honorarium—Secretary ... | | | | | | | 15 | 0 | 0 |
| £5 | 5 | 0 | ,, Sketch of proposed Society Badge ... ... ... | | | | | | | | — | |
| | — | | ,, Excursion Account—advance | | | | | | | 40 | 0 | 0 |
| | — | | ,, Field Day expenses ... | | | | | | | 43 | 13 | 9 |
| | — | | ,, Purchase of £200 Prize Bonds | | | | | | | 200 | 0 | 0 |
| £351 | 13 | 7 | ,, Balance in Bank ... ... | | | | 159 | 13 | 1 | | | |
| £7 | 2 | 8 | Less amount due to Secretary ... ... | | | | 40 | 6 | 11 | | | |
| | | | | | | | | | | 119 | 6 | 2 |
| £344 | 10 | 11 | | | | | | | | | | |
| £990 | 5 | 1 | | | | | | | | £771 | 10 | 7 |

I have examined the above account, have compared it with vouchers, and certify it to be correct, the balance to credit being £119 6s. 2d. which is on current account at the Ulster Bank Ltd. There is also a holding of £200 Dublin Corporation 5% Redeemable Stock 1968/73 and a holding of £200 Prize Bonds. Credit has not been taken for Subscriptions for 1957 £1 10s. 0d.; for 1958 £22 15s. 0d. and for 1959 £74 15s. 0d. which were outstanding at 31st December, 1959.

**9th January, 1960.**

D. M. CRAIG, Hon. Auditor, 85, Harcourt Street, Dublin.

The Department maintain 60 forest nurseries with a total area of 609 acres. The nurseries at Clonegal, Shelton and Camolin are larger than the average and have been mechanised considerably.

Gross expenditure in the Department has been climbing steadily in the last 6 years and while income has also regularly advanced, the net expenditure curve is still upward.

In the estimated gross expenditure for 1959/60 of £2,460,200, the estimated cost of labour is £1,400,000. This covers the wages of approximately 4,870 men and working these figures down to a weekly wage basis we get £5 10s. 0d. per man per week (approximately).

During 1958/59, thinning operations were carried out in 102 of the Department's forests, over an area of 7,776 acres. The number of stems removed was 1,041,986 and the volume was 2,332,137 cub. ft.

Sales of material less than 8″ quarter-girth at breast-height amounted to 2,578,398 cub. ft. This was a drop on each of the 3 previous years.

Material sold in the category 8″ Q.G. and over, came to 1,091,454 cub. ft. The total volume under these two headings, that is 3,669,852 cub. ft., does not include a figure of 38,701 tons of firewood.

The number of Christmas trees sold last year declined considerably from the '57/'58 figure and, at 35,160 was little more than half the '55/'56 figure.

Road-making in the Department's forests continued generally last year and in several forests I witnessed the changing landscape as the bulldozers ground their way forward, scooping, clearing, levelling and grading. When completed, these road-systems will have one important not-so-obvious advantage, and that is, to enable the forester to reach the scene of activities far more quickly and easily than hitherto. It is a common observation that far too much of the forester's time nowadays is taken up with office work, so that any innovation which saves him time is a definite asset.

Mention of the office-work brings up the question of the Incentive Bonus Scheme. This scheme has now extended to 100 of the Department's forests and is a subject for discussion both inside and outside the State Service. I am not sufficiently acquainted with all the facts to give an opinion on the success of the scheme or otherwise. I know that it has many critics, but I feel it should be allowed to operate for, say, 4 or 5 years, before final judgment is passed on it. At any rate, it is significant that approximately 2,793 men are at present working the scheme, this being well over half of the Department's total labour staff in the country.

The following summarises the fire damage in recent years: —

| Year | Fires Reported | Causing Damage | Acreage | Damage |
|---|---|---|---|---|
| 1958/'59 | 305 | 15 | 8 | £251 |
| 1957/'58 | 294 | 22 | 111½ | £5,226 |
| 1956/'57 | 309 | 34 | 188 | £4,190 |

*Chair of Forestry.*

On this occasion last year, I referred to the fact that the Chair of Forestry in University College, Dublin, was being re-established, having been vacant (or lapsed) since the time of the late Professor Henry. As you are all aware, the post has now been filled by the appointment of Mr. Clear as Professor of Forestry. I feel that everyone here will join with me in congratulating a man who has been a corner-stone of the Society since its foundation and who, to my personal knowldege, has never left undone anything which could be done to assist the cause of Forestry in this country.

I think we all appreciate the fundamental importance of this appointment, quite apart from the question of the personality involved. It means that Forestry education at the top level, instead of being treated as a sort of Cinderella, is now getting due recognition in the light of its present importance and its future potential for this country.

I am sure, however, that you will agree with me when I say that the long-overdue honour which has been paid to Professor Clear was about the most popular appointment we can think of in 1959. Personally, one of the forestry highlights of the last year for me was when, at a pleasantly informal function sometime before Christmas, I listened to Professor Clear as he "called the roll" of those who had graduated in Forestry from his own time onwards to the present. The very large proportion of his former colleagues and students who turned up at Newman House was a tribute to the man and the occasion.

*The Society.*

No review of the year's events would be complete without a reference to the Society's Study Tour to Denmark. I think all the members who travelled were delighted with the trip. At any rate, I certainly was. The Danes were obviously very, very keen and knew their forestry inside out. We saw many things that were strange to us, but everything was interesting and stimulating for Irish foresters. As the trip has been very fully written up in the last number of the Journal, I will not go into details, but I feel I must again express our indebtedness to our Danish friends in general for their princely hospitality and kindness. We are especially grateful to Dr. Sabroe, who was the one who really made the trip possible. From the home side of the expedition, it is an understatement to say that a substantial part of the success of the Tour was due to the untiring zeal of Mr. Mooney and the able assistants who helped him with the general arrangements and organization.

In regard to the question of membership of our Society, one of the things I find difficulty in understanding is the fact that by no means all of the State Foresters are members. Sometimes, when I put the question to a forester as to why he doesn't enrol, he says (facetiously, I imagine!)—"Ah, sure I couldn't afford it." What puzzles me is how any forester can afford not to be a member. The advantages are, to my mind, overwhelming to any forestry man of normal, sane outlook. I would, in fact, regard membership of our Society as one of the touch-stones of a forester's real interest in his job. If a forester is *not* interested in Forestry, he should be at something else, such as the Stock Exchange or raising greyhounds.

When I find some "expert" writing fluently in the public press or periodicals and advocating this or that approach to forestry and if I find he or she is not really sufficiestly interested in the subject to join our Society, then I have very grave doubts as to the sincerity of the writer.

In conclusion, I have to refer to the fact that, as I was unable to be present at the last meeting of the Council in 1959, I had no opportunity of congratulating the new Committee and of expressing my thanks to the Council members and the members of the various Sub-Committees for their loyal co-operation in keeping both the Society and our Journal in a flourishing state during the year.

In congratulating Mr. Maurice Swan on his election as President, I am happy to assure him that if he gets the same generous help from his Committee as I had from mine, then his task will be comparatively easy.

Members of the Society are well aware that in Maurice Swan they have a President who brings to the position many qualities and some obvious advantages, which were lacking in my case and which will ensure that our Society will flourish during his term of office. While it is by no means essential that the President of the Society be an official of the Forestry Division, there are considerable arguments in favour of having a man who is a full-time technical forester and who is in a position to be in almost constant touch with other foresters and with the members of his Council.

In relinquishing the office of President, I want to thank you again for the great honour you paid me and the patience you showed in putting up with me over the past two years. My hope and indeed, my confidence is, that the best years of this Society still lie ahead.

### 5. Confirmation of Election of 1960 Council.

The names of the Council are given at the beginning of this issue.

6. *Programme for 1960.*

A full programme of excursions for 1960 was announced.

7. There being no other business to transact the private business then concluded.

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## Public Business

After a short interval the meeting reassembled to hear Mr. R. P. Woods of the Timber Development Association, Ltd., deliver an address entitled "The Potentialities of Homegrown Timber," which is published in full elsewhere in this issue. Speakers to Mr. Woods's paper were Mr. W. J. Cusack (Clondalkin Paper Mills, Ltd.), Mr. D. A. Bell (Bowaters Irish Wallboard Mills, Ltd.), and Mr. W. P. Crowe (Irish Timber Industries, Ltd.).

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