

# Forestry — A Personal View<sup>1</sup>

T. CLEAR

Professor of Forestry,  
Agriculture Building, University College, Belfield, Dublin 4.

I confess Mr. Chairman, that when you invited me to address this meeting I was at a loss to know what to talk about. Your members present here include those who are now in the forefront of modern silviculture, research and inventory and who regularly participate in international consultations on every aspect of world forestry. It was suggested by you that forestry in Ireland was at a cross-roads and that it might be worthwhile to have a look at some of the major issues in forestry today or directions along which forestry might move in the future. I felt that it would be pretentious to take up that aspect and I was happy to have the title suggested in your letter, "Forestry — A Personal View".

## FIFTY YEARS OF FORESTRY

It is much easier for me to look back than to look forward to survey the milestones that have been passed on the road to our present impressive state of development, rather than to try to identify "major issues" in the future. I will, however, not entirely avoid commenting on the road ahead. I can look back over 50 years of forestry here — a full rotation. During that time there have been major developments in Ireland in many fields, not least in the field of forestry. The planting and replanting programme carried through since 1929 has transformed much of upland Ireland and has also changed us from a country with a shameful and rapidly declining timber resource to a situation where Ireland is not alone approaching self-sufficiency in timber but is promising to help meet Europe's yawning wood deficit. The young trees planted have, on the whole, fared well, nearly a million acres of lush forest clothe the bare uplands of earlier days and large amounts of good quality timber are already being harvested and impressive quantities are on the way. The successful establishment of the large — indeed for

<sup>1</sup> Based on a presentation to the Forestry Group, Agricultural Science Association at Belfield, December 7th, 1979.

Ireland — vast areas of productive coniferous plantations which are a source of wonder and, let us face it, dismay to many people has brought its own problems and opportunities to the foresters of the future.

There is no doubt that the greatly expanded planting programme which followed the introduction of the plough was in some senses “overdone”. In large measure, foresters today have to cope with results of past policies and procedures which are no longer considered valid. The nature and relative importance of the problems that have arisen or are likely to arise are by no means peculiar to Ireland but the solutions that have to be worked out and the priorities and opportunities that are likely to arise have no close parallel elsewhere in Europe. We may well have to work out our own salvation but we should also not hesitate to look further afield for guidance.

#### PAST POLICIES AND PROCEDURES

It might be a useful approach to look at the issues confronting forestry in the year 1979 by reference to the past policies and procedures that may have conditioned our present forestry estate in one way or another. Organised forestry in Ireland, as we know it today had, I suggest, its origins in the recession of the early 1920's and to an even greater extent to the depression of the 1930's. Afforestation was, in those days, looked upon favourably in Ireland as in many other countries as a useful opportunity for unemployment relief. Numerous afforestation schemes were initiated and carried out to employ former small farmers ruined by poor prices and the general collapse of marginal subsistence farming which was a feature of the times.

State forestry had been proceeding slowly and sedately and very cautiously during the first 3 decades of this century. Techniques and attitudes were patterned on those followed by generations of tree planters on large private estates in Britain. Traditional species like oak and beech, Scots pine and European larch predominated and activity was confined to safe old woodland sites or small areas of abandoned rough pasture, increasingly available due to the depressed state of agriculture. Planting operations were on a small handy scale. A wide range of species could be tried in any one forest with frequent changes in selection in line with accepted indicators in ground vegetation. Forest establishment was a relatively simple affair, closely controlled by trained working foresters and head labourers. Rural labour was plentiful and skilled in the use of the spade and mattock, felling axe and saw. Occasionally intractable ground had to be tackled; steep or stoney ground or peaty patches specially prepared by more intensive methods.

Tentative efforts on specially difficult sites, on land not hitherto improved or reclaimed from the mountain showed foresters how ill-equipped they were to move on to the type of larger scale afforestation that came in the 1930's. We are inclined to be surprised at the great programmes got under way in New Zealand and South Africa in the depressed '30's. Unlike their counterparts in those countries where foresters were not confronted with serious soil problems, our foresters had to resolve the problems of large scale afforestation on severely degraded sites to which forestry tended to be relegated. Podzolisation, peaty soils, water-logging and sterility occasioned by centuries of land hunger and pressure on sub-marginal land made it difficult to boldly acquire sizeable areas of land suitable for commercial afforestation with the trees and techniques then available.

#### THE FORESTRY PIONEERS

Foresters realised from early on that they could not depend on the indigenous or familiar European trees if they were to successfully extend operations into the uplands and the west. The problem of suitable exotics was by no means as straight-forward as seen in retrospect. We are all now very much aware of the significance and value of Sitka spruce and Lodgepole pine in Irish forestry. Their introduction on a wider scale was largely due to the vision and efforts of men like Henry, Forbes, Crozier and Anderson. A. C. Forbes, who may be fairly said to have initiated modern forestry here and who served as first Director of Forestry in Ireland, was retained by University College, Dublin, to take charge of the forestry class that registered in the Autumn of 1930 of which I was a member. One would welcome a whole book on the man and a wider recognition of his contribution to forestry in general and Irish forestry in particular. I propose to refer to one or two episodes which throw some light on the question of finding suitable exotics. Mr. Forbes managed a field trip to Camolin Park and brought us along to where he had carried out one of the first major plantings of Sitka spruce. He related how a severe late frost had blackened and apparently destroyed this newly established trial plantation. Accompanied by a senior official of the Department of Agriculture, to which forestry was attached at the time, he visited the scene and viewed the stricken crop. The official turned on him in disgust and anger and according to Forbes said, "That is the end of this forestry nonsense as far as my Department is concerned". Happenings such as these were by no means rare and it is not surprising to recall that many foresters were Sitka shy in the early days. At the time of our visit to Camolin Park, some twenty years on, this was a flourishing pole crop and continued to be an outstanding living example of the potential of this great tree for

many years. One could only agree with Forbes and Anderson in those days that one had to go cannily with new exotic conifers like Sitka spruce and Douglas fir.

#### FORBES' CONTRIBUTION TO THE DEVELOPMENT OF FORESTRY EDUCATION

It is not my intention to get side-tracked into an account of the development of professional forestry education. At the time we started the course, the association between the Department of Agriculture then responsible for State forestry and the new Faculty of Agriculture of the National University was very close indeed. A chance brought Forbes into the picture from the very beginning of our course. He was available to take full charge of our training from 1932 onwards and as a result we had the benefit of his considerable wealth of experience of forest management and his wide ranging involvement in forestry generally. Through Forbes we got an early introduction to the top field men of the day — Barry, Swords, Donovan, O'Beirne and McCaw — men who were the real pioneers of Irish forestry. There was, in those early years, a lot of doing and also a little studying. While forestry lacked the back-up of organised research it had the benefit of direct results on the ground in an array of pilot plantations about which people could talk from first hand knowledge. In retrospect one has to comment that the impact that research has had on the current basis of Irish silviculture has been nothing short of miraculous. In this context I recall an episode which has a bearing on the way the first fruits of research began to find application in the field. In 1933 in Ballyward property in west Wicklow, Dr. M. L. Anderson who had recently come into the service from the Research Branch of the British Forestry Commission, gave a demonstration to our gang of a new turf planting technique. That particular episode made a vivid impression and I have remained convinced that field demonstrations of new developments are of major value in getting research information across to field personnel.

Forbes was very conscious of the need for students to see and participate in forestry activities in areas and countries where advances were being made. He arranged for us to spend four months in Sweden where we were involved in field work in surveying, and inventory of growing stock as part of the 1st National Forest Inventory. This inventory became a blue-print for similar large scale inventories throughout the world. While it was difficult for us to foresee the application of systematic plot sampling and stand mapping in Ireland on this scale at that time it was a very valuable experience. Sweden was also pioneering in those days in peat drainage and the development of roading systems. Subsequent developments in Ireland were to highlight the value of those

experiences, the value of which could scarcely have been visualised by those involved purely in domestic forestry at the time.

#### OTTO REINHARD

Since this is a personal view I feel I must mention Otto Reinhard (Fig. 1). He was responsible for my period of study in Germany in 1936/7. His coming to Ireland, as some will still remember, was associated with the transfer of the Forestry Division to the newly created Department of Lands. The new Minister was assigned the task of rapidly increasing the planting rate from what was considered a more than adequate 3,000 acres a year programme in 1933, to 6,000 acres per year by 1935/36 and to continue to expand the rate thereafter. The stated intention was to extend as much as possible the afforestation to Western peat and to relieve the dire poverty in rural Ireland generally.

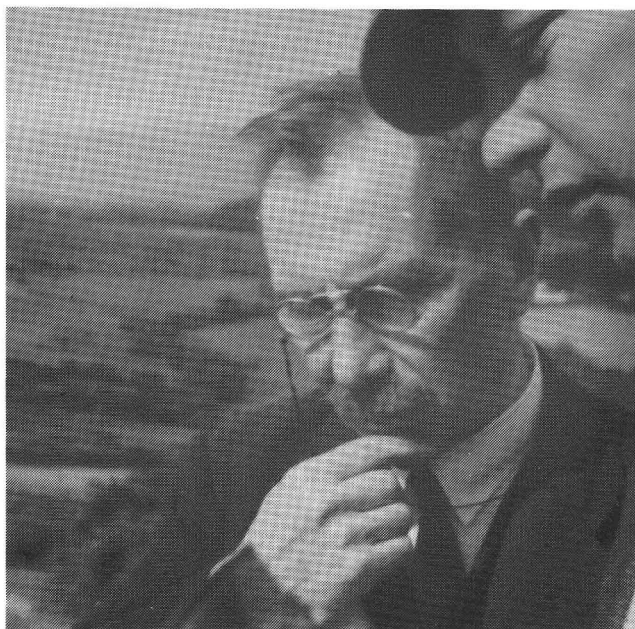


Fig. 1 — A. C. Forbes (left), first director of forestry in conversation with Otto Reinhard, director 1935/39.

*(Photograph: T. Clear)*

### FORESTRY IN THE SLIEVE BLOOMS

When I returned from Germany I was absorbed into the Forestry Service and after a brief spell at H.Q. in Merrion Street I was assigned to Portlaoise. I had a very valuable interlude under the D.I., Mr. P. Barry. Forestry was just taking-off in the Slieve Blooms at that time. Great pioneering work had in fact been done from 1913 and most of the older foresters got part of their early training there. It was possible in those days to acquire reasonably good plantable land in the glens around Mountrath and Clonaslee which were rapidly emptying of population. Paddy Barry knew the Slieve Blooms and recognised the potential of Sitka spruce as the tree for the wetter gleys and peaty gleys as well as the brown bracken coated podzolics. Blanket peats were avoided. The plantations which I had seen on the occasion of my first visit to Baunreigh in 1929 on a career guidance outing, had now begun to extend into the neighbouring valleys and slopes and one had direct evidence to go on. When I visit the areas around Ballyfin, Clonaslee, Capard, Camross and Kinnity today I marvel at the vast change that has been wrought in the hills of my native region. On a recent visit to North Leitrim I could not fail to be struck with the signs of things to come which will, no doubt, in time bring to that region the same dramatic improvements that forestry has brought to the uplands of Laois.

### FORESTRY IN THE WEST PRE 1939

In late 1937 I was assigned to Gort and worked under Michael O'Beirne. In pursuit of the stated policy objective of carrying forestry development to the sterile uplands of the Slieve Aughty mountains and the blanket peats of Connemara we were constantly on the road inspecting offers of land on some really daunting terrain. While many nice areas of old woodland dribbled in, the lands on offer on the whole were generally considered unfavourable and so progress was disappointing. A special mission headed by Director Reinhard took the local officers in tow on a survey which, as far as my memory serves, was largely concentrated on Oughterard and Cloosh. Mr. O'Beirne and myself, together with the local representative of the Oughterard Cumman and the German Director, made the inspection. The local man was obviously anxious to ensure that the German got a favourable impression and hoped for a favourable outcome. The Forstmeister was armed with a long steel probe, and being a man of great weight and strength, had no difficulty in pushing it a full two metres or more into the blanket bog at regular intervals. If he didn't strike bottom he just muttered (in German of course) "impossible". I never quite understood whether he found it impossible to believe that peat on hills could be so deep or whether he found it impossible

to believe that trees would live on it. Not so long afterwards he returned to Germany and I was called to the University (Fig. 2). It can be assumed then that it was accepted by all responsible silviculturists that forestry had no answer to the blanket peat in 1939 and that without a major breakthrough in site amelioration, forestry had no business there. I never fail to be amazed at the great transformation that has been wrought in Cloosh and was pained to learn of the great forest fire that swept through this "impossible" forest.

Foresters were less reluctant to tackle the heather covered mineral soils and substantial areas of Old Red Sandstone soils were acquired and planted. The reclamation of mountain land in the Slieve Blooms and in many parts of Munster, and also in the uplands of Leitrim, Cavan and Sligo was not a new concept. The period 1780-1845 is recorded as a time of great mountain reclamation.



Fig. 2 — Forestry students' class, 1939. Included are Professor G. J. Gorman, T. Clear, also T. O'Carroll, McGinty brothers, M. Swan, D. Quirke, P. Finnigan.

High prices for agricultural produce during the French wars 1792-1815 and the rapid increase in rural population pushed cultivation to extremes not hitherto assayed. While there was a marked drop in further reclamation after 1845 there was still an active inclination to reclaim and the techniques were well understood right up to the First World War. The art of reclamation seemed to have been largely lost as a result of the decline in agriculture that set-in in the early twenties. Land division policies and the break-up of the large estates relieved congestion and in the '30's much reclaimed mountain reverted to heather, bracken and rushes.

#### POOR PERFORMANCE OF SCOTS PINE IN UPLANDS

The cessation of reclamation and the abandonment of mountain land during the recession of the '20's and the farming collapse of the 30's, gave forestry a golden opportunity to acquire large tracts of potentially productive forest land without any objection from agriculture. These lands on offer were often too steep and rough to plough with the tackle then available and the only preparation possible was spot screefing to remove the heather or coarse grass and direct pitting or notching. Scots pine was generally considered the best available selection. It was widely accepted that proper reclamation for agriculture would involve deep cultivation and the mixing of upper soil horizons together with top dressing of dung or road scrapings. This could be a tedious and costly operation even on the easiest of sites and the forester hoped that the trees themselves would, in time, ameliorate these difficult conditions. While there was fair success on areas that had been reclaimed and reasonably maintained, on ground where profiles had been undisturbed results, particularly with Scots pine, were poor. Many still remember sizeable areas of crippled Scots pine choked with furze and heather which disfigured many an upland forest and dismayed forestry propagandists. In this context I remember Forbes recalling his chagrin and disbelief at the poor showing of Scots pine in Ballyhoura, an area that he himself had reported as being very favourable for Scots pine at the time of acquisition. I remember also how he constantly drew attention to the occasional Lodgepole pine that showed much better promise.

#### THE ADVENT OF THE PLOUGH

I believe the great significance of that period up to the advent of the plough and the acceptance of 10,000 ha as proposed by Sean McBride as an annual afforestation target that came in as part of the first post War recovery programme, and underwritten by the Cameron Report was to focus strong Government attention on the new techniques that were being introduced around 1950 in Great Britain (Fig. 3).



Fig. 3 — Roy Cameron (left) F.A.O. forestry expert visited Ireland in 1951. Pictured with him are (left to right) Professor M. Tierney, President U.C.D., T. Clear and Sean McBride.

*(Photograph: Independent Newspapers)*

Many still remember the heartening report Mr. McEvoy and Mr. Meldrum brought home from Britain about the work of the giant ploughs then coming into use. Foresters flocked to join a study tour to Wales to see ploughs in action. What has happened since is history and is so well recorded as to be commonplace. What may not be appreciated by many non-foresters is that large areas are now carrying valuable stands of Sitka spruce and Lodgepole pine on sites previously deemed to have very limited suitability for forestry. The irony of the situation is that the same soil types which had zero suitability for agriculture and would have been happily assigned to afforestation are now as a result of techniques largely pioneered by forestry being strongly recommended for reclamation by our agricultural colleagues. This turnabout is a measure of the great

strides made in site amelioration as a result of fertiliser use and the development of machinery which could mix the peaty surface horizon with the sub-soil horizons and break the impermeable layers. That such equipment could be fabricated or that it would be so robust and so successful in giving massive disturbance with consequential improvement of drainage, aeration and rooting availability was only a wildly impossible dream to the few. The puny efforts and the inadequacy of the tools available in earlier days are now just a fading memory. The idea that the trees themselves would in time ameliorate the most intractable soils dies hard. I recall in 1969 an eminent ecologist of world renown standing on a most impossible piece of Slieve Aughty land and expressing the opinion that if left to nature and kept out of forestry hands it would revert quite rapidly to mixed hardwood forest.

I believe that where cultivation has been intensive and thorough one can look forward to such soils behaving in time as good quality forest soils with the exciting potential for the use of more exacting coniferous and hardwood species if desired in the future. On areas where the cultivation was less thorough it may be necessary, as is happening in Germany, to apply a more intensive programme of amendments at the replanting phase.

#### GREAT CHANGES IN UPLAND IRELAND

The improvements effected on Irish soils by the present generation of Irish foresters is one of the most constructive changes that has been wrought in upland Ireland since Bronze Aged man removed the native oak and pine and exposed our mountains to the degrading effects of an unfavourable climate. Generations of human endeavour could only partially halt this degradation until the advent of the machine. Today we are witnessing the massive extension of the mechanised phase of hill-land reclamation for agriculture. One continues to wonder at the reclamation that is going on, some of it bordering on the incredible. According to informed reports these reclaimed podzols can at best give only moderate returns for the energy consumed in mechanical site preparation and in the use of fertilisers and lime. Even a mild recession in agriculture may well see a partial re-run of the story of upland abandonment that followed the great period of mountain reclamation of 1780-1848. In any event this great surge of development in Irish upland spear-headed by forestry, must not be allowed to falter, the long term benefits for the nation as a whole make it all worthwhile.

The successful establishment of extensive even-aged plantations of exotic conifers on soils which have not hitherto carried trees is for Ireland a matter for congratulation. The decline in new planting in recent years affords one the opportunity not only to reflect on past

achievements but to take a fresh look at the question of exotic afforestation in the days ahead. While one hopes that the decline in new planting will be reversed in the near future there is much to be done in the context of the existing forest estate. Most foresters throughout the world are aware that it is wise to have a proportion of the woodlands of a country managed along more classical lines. Extensive monocultures of alien softwood tree species are viewed by some as ugly intrusions into the landscape and a threat to native plants and animals. Foresters are at pains to demonstrate that increasingly, forest areas are required to be managed to provide not only wood and its products, but scenery, wildlife and recreational facilities.

#### SOIL RESEARCH A PRIORITY

The long term effect of short rotation monocultures on soil fertility and structure is not known and ongoing soil research must have a priority in this context. There is evidence from several sources throughout the world that the growth of the second crop may be significantly less than the previous crop. It may be that infertile soils will not be able to replace natural nutrients taken off in harvested trees and that the loss may have to be systematically restored by the use of fertilisers or by crop rotation. Land reclamation techniques and the use of stumps and roots as biomass may make for alternation between forestry and agriculture, with trees being followed by grass or tillage crops or by a combination of grass and trees as in New Zealand today.

#### NEED FOR SUITABLE REGIMES FOR SITKA SPRUCE AND LODGEPOLE PINE

It has become increasingly apparent that timber cannot always be grown profitably under regimes widely used in the past. A major problem today is to develop suitable regimes for the management of Sitka spruce and Lodgepole pine under local conditions. Sites vary considerably and the silvicultural and economic problems associated with thinning of overstocked stands to desirable density evoke much discussion. Wide planting spacings and early heavy thinning as a means of securing crop stability and a better possibility of regulating conditions of site and stock in the critical later stages are being advocated. The development of thinning systems is one of the most challenging issues in forestry today. I have been greatly impressed by the work done in this field here in Ireland, particularly by Gerhardt Gallagher. I personally have been influenced to a degree by the writings of Hiley in regard to South Africa and also by studying and seeing on the ground the New Zealand approach to the thinning and general management of exotic conifer plantations for saw-log production.

### MANAGEMENT TABLES

In earlier times foresters frequently formulated their own objectives and decided the size and structure of crops and the production regime in the context of the conditions they had to contend with. The great change in recent times was associated with the introduction of Management Tables. Many people today criticise Management Tables and refer to them as old fashioned and not appropriate to present conditions. Foresters in the past, in the absence of tables, had to learn by the painful process of trial and error. Reliable methods were closely adhered to and 'new' methods advocated by cranks tended to be distrusted. Management methods formulated as a result of well planned investigations are readily accepted. Unfortunately the practicing forester has been locked in on one set of tables with little freedom of choice of action. It would be greatly welcomed if the research people would provide a solid base whereby the means and the technology for timely respacing and thinning could be applied to a variety of stands and mixtures.

Forestry and timber production in the future have to be related to the prospective economic developments both here and in Europe. It is difficult indeed to forecast the economic expansion here. The general consensus is that the long-term prospects for the forest industry are excellent. What is perhaps of more significance to forestry is the capacity of our forests to meet the demand for exotic wood in the event of the establishment of large integrated industries here.

Professor Convery in his excellent review of wood markets makes the point that the dislocations engendered by the current recession, combined with the much larger volumes of wood now becoming available to Irish processors provides an excellent opportunity for new large scale wood processing plant here. Access to computer facilities and to inventory data should be of great value to those who undertake feasibility studies in connection with the type of plant and its location. Computers should be used also to help with determining the tending and cutting schedules and management regimes to ensure that the forests will be able to meet the demand.

### TRENDS IN TIMBER USE

There is a danger, however, that the trends in timber use apparently firmly established in the days of cheap energy may have begun to change in a disturbing fashion. The steady rise in total wood use in Europe in the present century, and particularly in recent decades, implies a rise of only 2 per cent compound in sawn wood while wood-based panels, paper and paper board were expected to grow at a rate of from 6 per cent to 10 per cent. In this context one cannot fail to be conscious of the present run on firewood of all kinds and to ponder on the implications for future

silviculture and industrial wood availabilities. Firewood in Europe in 1913 accounted for half the total wood used. Since that time Europe's total wood use figures have doubled, but firewood use had fallen up to 1975 from 140 million m<sup>3</sup> to 90 million m<sup>3</sup>. Much of the firewood category material went to supply the expanding demand for industrial wood. Is this trend now likely to be reversed?

The questions arise — should we continue to make pure conifer stands or should we use more hardwoods, as a contribution to the future energy supply. On the face of it evergreens like Sitka are inherently efficient in photosynthesis and therefore comparatively more productive. There is no reason why we should not divert some of our conifer thinnings to fuel use. Could we look forward to running our silviculture and harvesting on the unmerchtable waste of thinnings, tops, branches, bark and stumps, and rather than trying to solve the energy problems of the world, try to meet local energy needs as forestry did in the past? We are looking increasingly towards Brussels and the EEC for guidance and support in relation to agriculture. One wonders why forestry has seen so little in the way of positive action or guidance or where our forestry stands in regard to Europe's industrial needs.

#### EUROPEAN FORESTRY DECLINE — IMPLICATIONS FOR IRELAND

European forestry has suffered in consequence of the declining role of forests and forestry in the general economy. This is evidenced by the reduction of the area under forests and the *per capita* decline in the area of productive forest except in Ireland and Britain. The reasons are not far to seek. The decline in relative importance of home wood production in value terms and the increase in costs, particularly those associated with forestry labour have not helped European forestry. Recent surveys of the economic performance of woodlands in the Netherlands lead to the conclusion that forestry in that country operates at a substantial loss. The same would likely be found to hold for most other members of the EEC. This situation must lead to a further decline in European forestry unless there is a major reappraisal of the support and the wood marketing situation. There seems to be little prospect that the EEC can revitalise Continental forestry or can secure an extension of the area under woods or plantations. The situation here, therefore, holds out major attractions in regard to the question of improving the supplies of sawn timber or industrial wood provided we are allowed to operate with an eye to maximising our comparative advantage. In this connection I am rather disappointed that the Agricultural Science Association or the Forestry Group has not come out more forcefully in regard to the proposals on Irish Forest Policy by the National Economic and Social Council and

the recommendations of Professor Frank Convery following his masterful study of the whole question of Irish forestry.

I was particularly taken with his proposals for the extending of private forestry and the potential revealed by his economic appraisal of the afforestation of drumlin soils. The whole question of the extension of forests here and the maximisation of results from further afforestation seems to be tied up with the issue of land acquisition. Since 1970 land prices generally have risen 10 times and unless and until this meteoric rise comes to a halt, the prospects for the outright acquisition of suitable land seems bleak indeed. It is in this context I suggest that the proposals by Convery and by Bulfin in Part 111A (Forestry) of the County Leitrim resource survey, should be the subject of a full scale seminar by the full Association or by the Forestry Group.

My primary purpose this evening has been to draw attention to some of the major developments in the distant and recent past. I believe there is a major need for our profession to become more active in publishing the benefits which man derives from forestry and the challenge that forestry offers to the coming generation. The general public appreciates that wood fulfills numerous requirements in mans domestic, agricultural and industrial activities but the many benefits are only gradually coming to be recognised. Environmental forestry is here to stay and is providing a broader concept of forest management in Ireland. Foresters must increasingly be ecologically orientated and seen to be interested in applying ecological principles so as to ensure that natural resources are handled without prejudice to future resource use. Today, aesthetic, recreational and amenity considerations are beginning to rank equally in importance with wood products as important contributions from forest land. I trust that through the dedication and quality of the members of this association, Irish forestry will be well served and that as a result increased recognition will be given to the role that forestry plays in the affairs of this nation.