



IRISH FORESTRY

JOURNAL OF THE SOCIETY OF IRISH FORESTERS

Volume 46 No. 2, 1989

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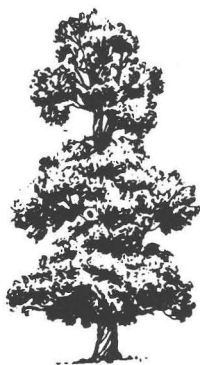
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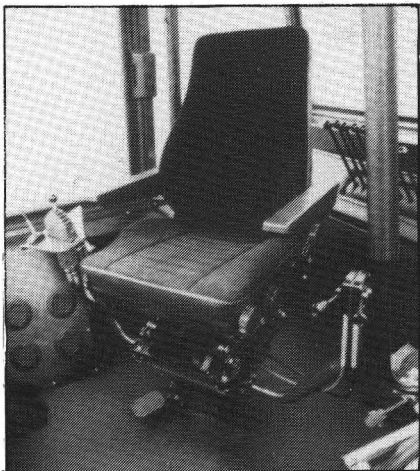


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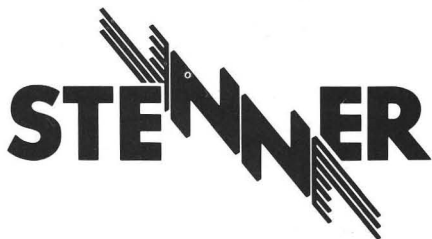
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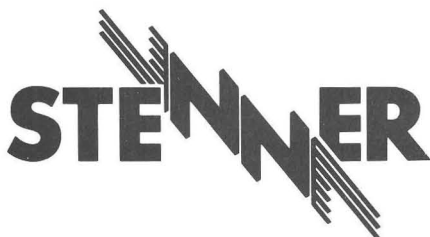
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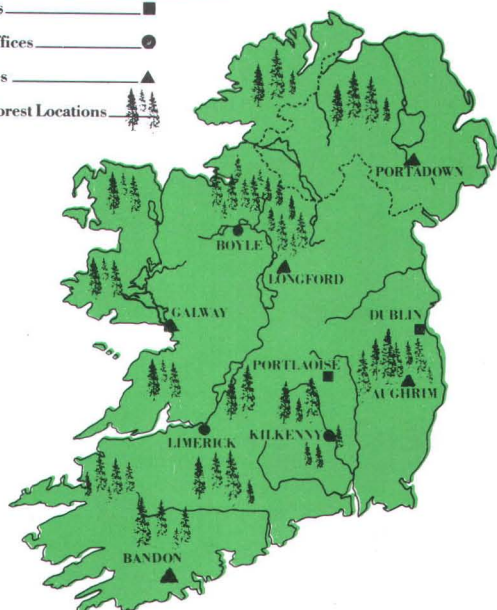
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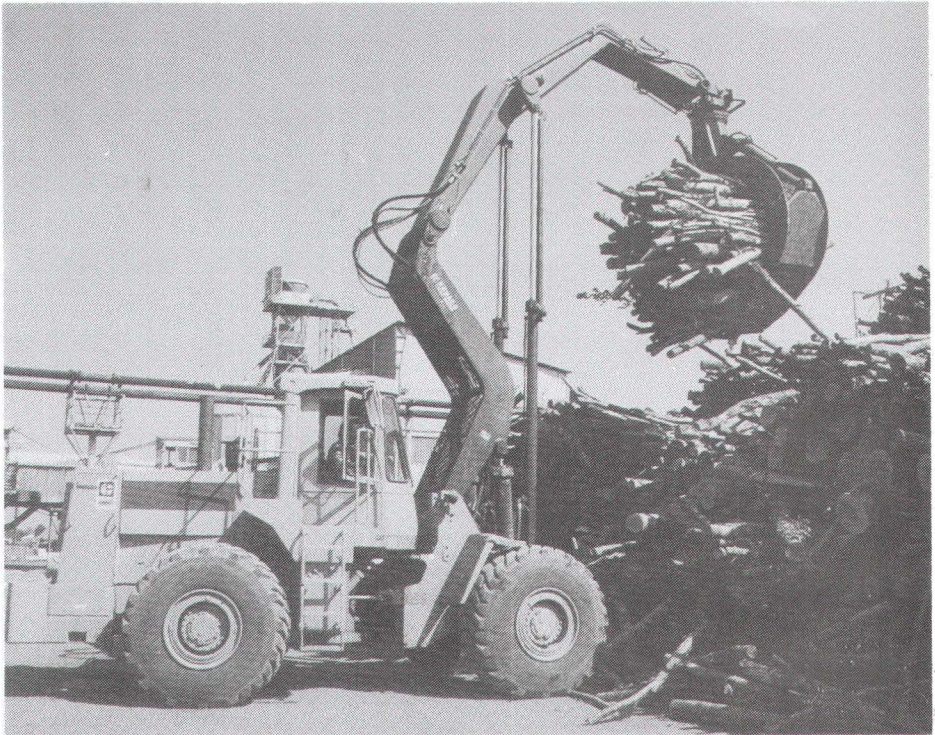
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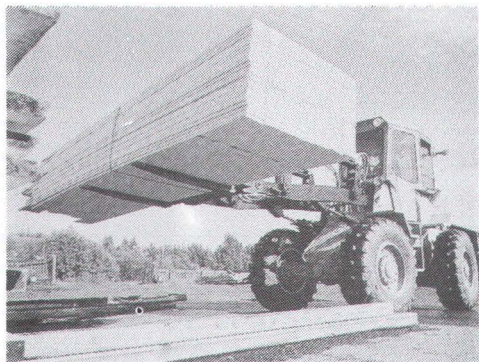
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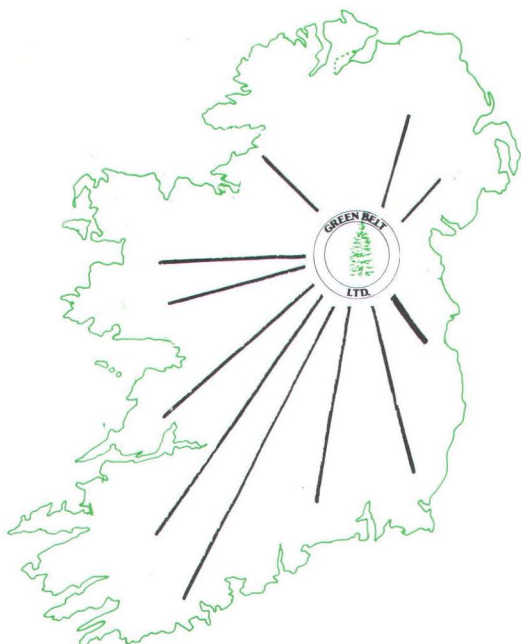


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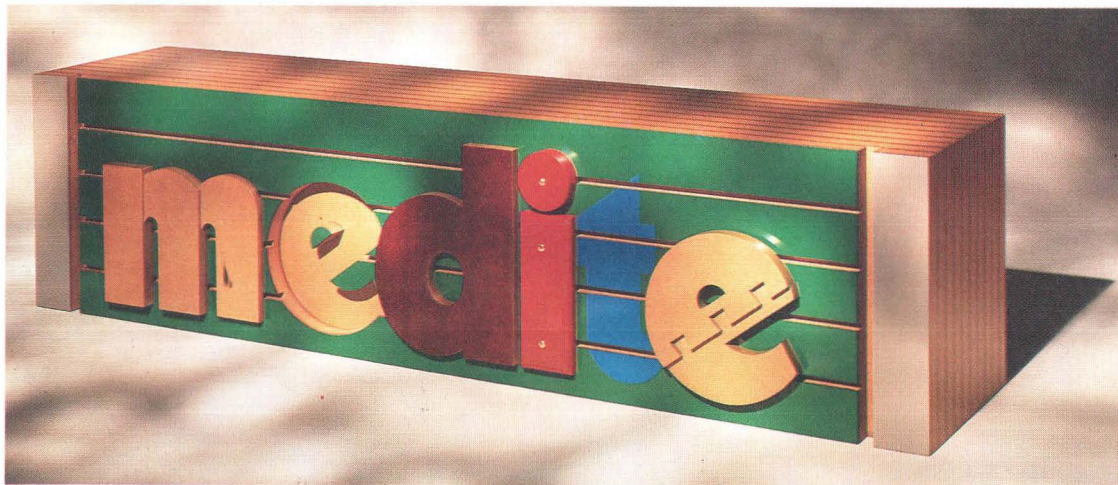
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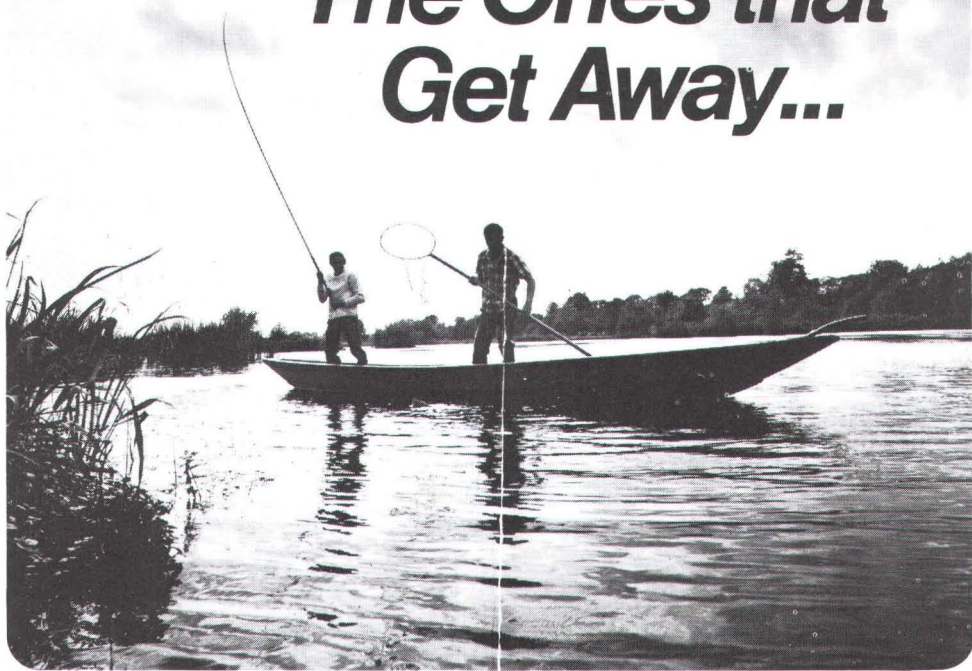
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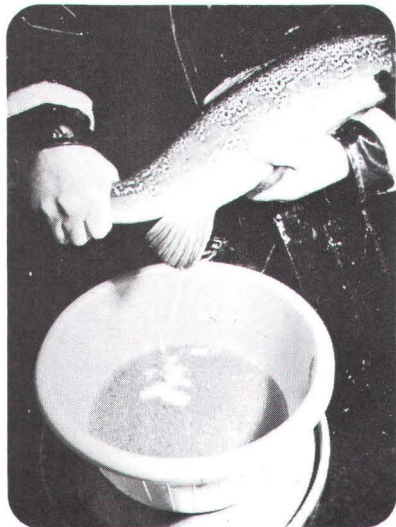
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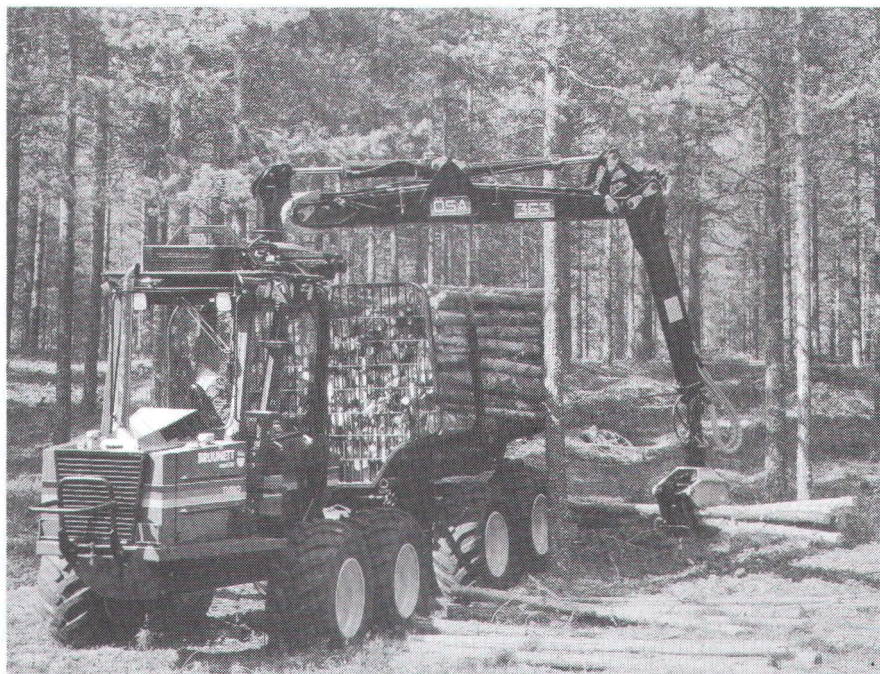
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Uptake of Organic Solvent Preservative by Plantation Grown Lodgepole Pine

J. A. Evertsen and D. C. Cahill

Forest Products Department, Eolas, Glasnevin, Dublin 9.

Introduction

By tradition, redwood and tropical hardwood are used in Ireland in the manufacture of external joinery products such as windows. During the late 1980s an increased availability of Irish grown lodgepole pine has created an awareness of the potential value added end-use of this species in the joinery product market. The increased availability is only recent and information is required on the properties of this plantation grown pine species.

In the effective use of lodgepole pine in joinery, such as windows, durability is a crucial factor in the acceptance of the material. The sapwood of lodgepole pine has, like other redwood species, very limited durability and is susceptible to decay (Anon. 1979, 1985). Modern silvicultural practices result in plantation grown redwood timber containing a large proportion of sapwood. When untreated external redwood joinery components containing sapwood are put into service, decay is likely to set in within five years. In timber products such as windows, such a short lifetime is not acceptable. However, the fungicidal and insecticidal action of a preservative treatment in external redwood joinery components can ensure a lifetime of up to 60 years (BS 5589: 1978).

Information on the preservative treatability is essential for the successful application of Irish lodgepole pine in the manufacture of external joinery. At present no data are available on the preservative uptake and retention properties of plantation grown lodgepole pine from North-West European origin. The Lodgepole Pine Taskforce (Evertsen, 1989) was set up to investigate technical properties of Irish plantation grown lodgepole pine. The work reported on here is part of the Taskforce programme.

Various methods of wood preservation are available. In the case of external joinery, the use of organic solvent based chemical formulations, applied

by the Double Vacuum Process, is the most widely used in Ireland (Cahill, 1989). While preservative treatment of timber adds value to the product, cost is incurred by the operating company. This cost is closely and directly related to the volume of preservative solution absorbed. Hence, minimal uptake for optimum wood protection is a constant objective. Excessive absorption is both unnecessary and costly. Furthermore, it can lead to problems of 'bleeding' in service, with subsequent damage to surface coating and surrounding plasterwork.

The objectives of this study were:

1. To measure the volumetric uptake of organic solvent preservative by plantation grown Irish lodgepole pine.
2. To determine the retention (loading) of the active fungicidal ingredient bis(tri-n-butyltin)oxide (TBTO) in the preservative solution used.

Materials and Methods

In this study, two pine species were used, Irish plantation grown lodgepole pine (*Pinus contorta*), and Swedish Red Deal (*Pinus sylvestris*). Joinery sized sections of both species were evaluated for the uptake of organic solvent based preservatives. A Double Vacuum redwood schedule, currently used for the treatment of imported Red Deal joinery, was applied. Throughout the study, imported Red Deal was used as control material.

The lodgepole pine was obtained from a stand of Yield Class 14 in Kilworth Forest, Co. Tipperary with an average of 9 rings/25mm. Logs were converted into 4.2m boards of 67mm in thickness at the Coillte Teoranta sawmill, Dundrum, Co. Tipperary. All sawn timber was stick-ered and air-dried to 17% moisture content. The Swedish Scots pine was obtained as a random 1 cubic metre parcel of unsorted grades (brand: "Crown CRN Crown")¹, from a local importer. The boards in this parcel showed an average of 17 rings/25mm.

A total of 50 samples were prepared for each species. The experimental samples were cut and planed to sections of 1.20m x 60mm x 73mm which are typical joinery stock sizes (IS 63, 1984). Each sample was selected to contain a minimum of 25% of both sapwood and heartwood. This criterion was confirmed by using a specific sapwood/heartwood stain on both ends of each sample (BS 5666, 1980).

All samples were treated in the research sized "Protim Pre-Vac"² Double Vacuum plant at Eolas (Fig. 1). To compute preservative uptake, samples were weighed, both pre- and post-treatment. Two preservation runs (charges) were required to accommodate the 100 samples. Each run comprised of 25 lodgepole pine and 25 Scots pine samples. The treatment schedule used was a standard Redwood schedule (Table 1).

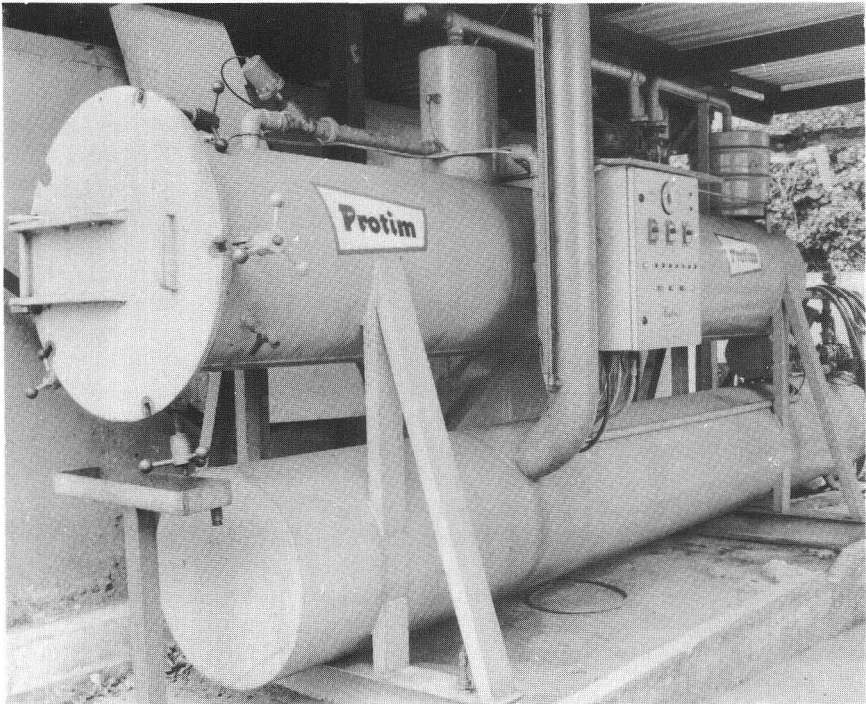


Figure 1: Protim Pre-Vac double vacuum plant in which the timber samples were treated.

Table 1: Preservative Treatment Schedule for Redwood, using Organic Solvent Preservative, (From: BS 5589, 1978).

Initial Vacuum		Pressure Stage		Final Vacuum	
Pressure (1)	Time (2)	Pressure	Time	Pressure	Time
-0.33	20	0	3	-0.67	20

(1)=BAR pressure.
(2)=minutes.

After treatment and before analysis, the samples were stickered and left to dry for 3 weeks outdoors under cover.

The preservative solution for the "Protim Pre-Vac" Double Vacuum process contained both, bis(tri-n-butyltin)oxide (TBTO) and pentachlorophenol (PCP) as the main fungicidal ingredients. The analysis of PCP in 'Prevac' treated wood is complicated and time consuming. This analysis is therefore not normally carried out. However, the determination of TBTO is considered to give an accurate picture of the level of 'Prevac' treatment. Irish Standard (IS 63, 1984) calls for a loading of 0.03% w/w TBTO (+0.13% w/w PCP) in the outer lateral 3mm sapwood layer of redwood. This is required to give protection against decay in an external but out of ground contact end-use application.

In preparing the treated samples for analysis of TBTO, a 10cm wide cross-section was cut from the mid-point of each 1.2m sample. From this subsample, a 3mm thick section was removed from the outer surface on both the sapwood and heartwood sides. The samples were processed and quantitatively analysed using an atomic absorption method in accordance with BS 5666, Part 7 (1980).

Results

The preservative uptake by 50 lodgepole pine and 50 Scots pine samples was determined. The preservative retention of TBTO in both heartwood and sapwood of each of the samples was analysed.

Table 2: Mean Gravimetric Uptake (grams) of Organic Solvent Preservative by Irish Lodgepole Pine and Imported Scots Pine.

Charge No.	Species	Uptake (grams)	
		Mean	Std.*1 Dev.
1	Lodgepole pine	118.4	65.9
	Scots pine	100.2	38.4
2	Lodgepole pine	76.2	45.2
	Scots pine	98.4	35.1
Average of 2 Charges:			
	Lodgepole pine	97.3 (22.77)*2	59.8
	Scots pine	99.0 (23.17)	36.6

*1 – Standard Deviation.

*2 – Equivalent in litres/m³.

Table 3: Average Retentions of TBTO (% w/w)*1 in Sapwood and Heartwood in Irish Lodgepole Pine and Imported Scots Pine and their 90% Confidence Intervals.

	Sapwood	Heartwood	(Sap + Heart)*2
Lodgepole pine	0.037	0.013	0.030
Scots pine	0.030	0.015	0.024
90% Confidence Interval			
Lodgepole pine	0.033-0.041	0.012-0.015	
Scots pine	0.026-0.033	0.013-0.017	

*1 – Weight to weight.
*2 – Average of (Sapwood + Heartwood) retention.

Table 2 gives a summary of the gravimetric uptake of preservative solution by species.

Table 3 shows the average retention of fungicide TBTO by the heartwood and sapwood sections of both plantation grown Irish lodgepole pine and imported Scots pine.

Table 4: Analysis of Variance*1 of TBTO Retention (% w/w) in Irish Lodgepole Pine and Imported Scots Pine.

Source	Degrees Freedom	Sum of Squares	Mean of Squares	F-value	P*2
Species	1	0.1237	0.1237	0.38	0.541 NS
Sap/Heart	1	35.7255	35.7255	162.60	0.000***
Samples	98	32.1906	0.3285	1.49	0.000***
Interaction	1	1.4964	1.4964	6.81	0.010***
Error	98	21.5326	0.2197		
Total	199	91.0688	0.4576		

Components of Variance:

Samples 0.054
Measurement 0.21972

*1 – Analysis of Variance is based on logarithms to base e.
*2 – NS=Not Significant; ***=Highly Significant.

The 90% confidence interval in Table 3 indicates that TBTO retention can be expected to be within the ranges indicated, for species and wood section, with a 90% surety.

The results of an analysis of variance and the components of variance are given in Table 4.

No significant difference was established between species. Highly significant differences were found between heartwood and sapwood of both species. Highly significant differences were also found between the samples of both species.

Discussion

The preservative treatment of softwood timbers exposed to weathering is essential in order to prolong the life-span of the timber components in service. In the Lodgepole Pine Taskforce programme, it was demonstrated that plantation grown Irish lodgepole pine was suitable for the manufacture of external joinery (Evertsen, 1989). To ensure satisfactory performance of this species, appropriate preservative treatment is essential.

Imported Red Deal (Scots pine) is the principal species currently used in Ireland for the manufacture of external softwood joinery. It is this material which Irish lodgepole pine has to compete with in the softwood joinery market place. For successful import substitution, lodgepole pine has to be at least comparable to imported Scots pine, in regard to quality and technical performance.

The treatability of a timber species indicates the amenability of that species to preservative impregnation. It reflects the level of preservative absorption and retention. The heartwood of North-American lodgepole pine and European Scots pine are resistant and moderately resistant³ respectively to preservative uptake (Anon, 1977, 1985). The sapwood of pine species is generally more permeable than its heartwood (Anon, 1977).

The gravimetric uptake of preservative solution by Irish lodgepole pine and imported Scots pine did not differ greatly. The lodgepole pine had an average uptake of 22.77 l/m³, while imported Scots pine showed an average preservative uptake of 23.17 l/m³. The 0.4l difference between the two species is statistically insignificant. It must be stressed however that these specific volumes of preservative uptake are only relevant to timber of the dimensions used in this study.

The average retention of TBTO by the lodgepole pine (sapwood + heartwood) was 0.030% (w/w), while the Scots pine showed a retention of 0.024% (w/w). The difference in the retention of the fungicide TBTO was found to be statistically insignificant.

Analysis of sapwood and heartwood of both species showed that sapwood retained 2-3 times more TBTO than heartwood (Table 3). However, the sapwood of the lodgepole pine retained up to 23% more TBTO than the

sapwood of the Scots pine. In contrast, the heartwood of lodgepole pine retained up to 13% less TBTO than the heartwood of Scots pine.

In Table 2, the preservative uptake values given show a large standard deviation for the mean uptake value. This may be explained by the difference in permeability between the sapwood and heartwood of both species. The greater standard deviation for lodgepole pine may be attributed to the greater permeability of Irish lodgepole pine sapwood than that of the imported Scots pine (Table 3). A similar trend was also evident in the retention of TBTO. Furthermore, the imported Scots pine heartwood shows a slightly higher TBTO retention than that of Irish lodgepole pine (Table 3).

However, from a commercial point of view, it is considered that both species had a similar uptake and retention of organic solvent preservative. Hence, these findings contribute to the support of the potential substitution of imported Red Deal with plantation grown Irish lodgepole pine.

Conclusions

1. Plantation grown Irish lodgepole pine can be successfully treated with an organic solvent preservative by the Double-Vacuum process.
2. The gravimetric uptake of preservative solution by Irish lodgepole pine is similar to that for imported Red Deal (Scots pine) of Swedish origin.
3. The retention of the fungicide bis(tri-n-butyltin)oxide (TBTO) by Irish lodgepole pine is similar to imported Red Deal.
4. The cost of organic solvent preservative treatment of Irish lodgepole pine is equivalent to imported Red Deal.
5. The treatability of Irish lodgepole pine contributes to the potential import substitution of Red Deal.

Acknowledgements

This research was carried out under the Lodgepole Pine Taskforce Programme which was financed by the Forest Service of the Department of Energy. The authors also wish to thank Dr. K. Mosurski, Trinity College, Dublin, for the statistical analysis, Mr. P. R. Colclough, Head of Forest Products Department, Ms. Kinsella and Mr. M. McCourt for their technical assistance.

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NOTES

1. "Crown" – represents the crown symbol.
2. "Protim Pre-Vac" is a Registered Trademark for a Double Vacuum plant supplied by Fosroc Abrasives & Chemicals Ltd.
3. (From: Anon. 1977, 1985)
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Forest Service, Leeson Lane, Dublin 2.

*** Paper given at public meeting organised by Society of Irish Foresters, December 1988**

A former and esteemed member of this society, the late Dr. Eileen McCracken informs us in the introduction to her book “The Irish Woods since Tudor Times” that in 1600 about 12.5% of Ireland was under forest, this had reduced to 2% by 1800. When the inquiry committee was set up in 1907 under T.P. Gill, Secretary of the Department of Agriculture and Technical Instruction, to examine the problems associated with the deforestation of Ireland the area under forest had reduced to less than 1.6%. The ready availability of Irish woods and forests to help the 1914 – 1918 war effort reduced this cover even more, a reduction which continued for another eleven years.

Unlike forest cover in other climates, the reduction of forest cover in Ireland had little impact upon the physical welfare of the ordinary people of Ireland. They relied on the forest for neither fuel or food. Yet there was a realisation that in spite of the generations of deprivation and hardship, woods and forests were key cultural and economical elements to the identity of a new and struggling nation. Their demise was lamented in song and verse and lead to the ready acceptance at an early stage of the new nations development, that their replacement was essential.

Today Irish people know the value of their forests and are grateful to the enlightenment of previous generations for their foresight and sacrifice. Ireland’s forests now cover approximately 6% of the land mass of the State and represent an investment valued by the Review Group on Forestry in 1985 at between £600 million and £1,100 million. Although by European standards our area of forest is small, it does represent about £300 for

Table 1: WOOD IMPORTS 1977-1987

DIVISIONS	1977			1987	
	Value of Imports (IR£1977)	*Value in (IR£1987)	Imports in Tonnes	Value of Imports (IR£1987)	Imports in Tonnes
24 Wood Raw Materials	39,015,000	83,771,569	256,561	55,143,000	198,659
25 Pulp/Waste paper	6,199,000	13,310,264	33,260	7,649,000	20,853
63 Wood/Manufacturers	19,480,000	41,826,738	61,027	44,420,000	74,674
64 Paper/paperboard	84,613,000	181,677,913	222,723	298,763,000	385,515
	—————	—————	—————	—————	—————
	149,307,000	320,586,484	573,571	405,975,000	679,701

* By General Wholesale Price Index.

every citizen of the state; probably the largest per capita investment in afforestation in Europe.

Historically this investment had more of a social dimension than an economic one, in so far as the choice criteria for land use was based on what was best for farming rather than what was the best economic investment. This social dimension recognised mainly the employment potential of forestry but also in a vague sort of way, its contribution to the social ills of rural Ireland as well as improving its landscape. Like the arts, everybody was in favour of the enterprise. It was expected of course to make a financial contribution, perhaps too much in the light of the type of land that was planted. The break even date, not to mention the pay back dates, were lost in the uncertainties of the future.

Ireland's forests which mainly comprise of conifer species, are indeed now making a substantial impact on her national trade statistics. They contribute handsomely to the reduction of timber deficits which are now an estimated 55% as opposed to 85% ten years ago. However despite this favourable situation, the low percentage of broadleaf species in the forest estate results in Ireland importing tropical timbers to satisfy the demand for high quality hardwood.

Tropical Wood Imports

Trade in tropical hardwoods within these islands was originally based on supplies from the British colonies. There are two main end-use areas, furniture and joinery. The furniture trade in solid wood was originally based on Honduras mahogany. On depletion of this resource the trade turned to substitutes; African mahogany and Shorea species from South East Asia. Brazilian mahogany has now become a major species.

The joinery trade was based on softwoods. With the decline in quality, allied to a lack of preservative treatment, the Irish joinery trade sought a species which would withstand the rigours of the Irish climate. Iroko, commonly referred to as "Teak", was found to be suitable and is now the major species imported.

In order to determine trends in imports of tropical timbers an examination of the trade statistics for timber and timber products imports, their volumes, values and costs was made for the years 1977 and 1987. The statistics for total wood imports are given in table 1 and for imports of tropical timbers in table 2.

Following consultations with the Central Statistics Office, it was decided that all cash values be converted to 1987 (Irish) pounds using the General Wholesale Price Index. This was considered more appropriate than the Consumer Price Index since the product was subject to further manufacturing processes. The index is 451.2 for 1977, and 969.8 for 1987. The base year is 1953. In effect this has meant that general wholesale prices increased by

Table 2: TROPICAL WOOD IMPORTS – 1977-1987

COUNTRY	1977 Imports			
	Value in IR£(1977)	*Value in IR£(1987)	Tonnes	Price per Tonne IR£1987
Ivory Coast	2,078,575	4,467,646	11,254	397
Ghana	1,497,493	3,218,681	5,980	538
Brazil	1,897,332	4,078,086	7,755	526
Europe	303,842	653,072	323	2,022
Malaysia	272,720	586,179	1,892	310
Philippines	283,375	609,080	1,040	586
Nigeria	83,893	180,318	296	609
Congo	1,086	2,334	2	1,167
Liberia	108,528	233,268	538	434
Singapore	47,719	102,566	224	458
Zaire	—	—	—	—
Taiwan	7,560	16,249	25	648
Cameroon	3,783	8,131	23	361
Guyana	44,943	96,600	149	649
Kenya	32,330	69,489	89	781
Mozambique	28,681	61,646	39	1,571
S.A & Namibia	567,372	1,219,498	1,988	613
Argentina	9,207	19,789	36	555
Indonesia	41,143	88,432	245	361
Mauritania	2,396	5,150	19	269
Cape Verde	825	1,773	4	443
Central Africa	10,598	22,779	52	438
Somalia	3,232	6,947	18	386
Madagascar	3,280	7,050	15	470
Honduras	4,043	8,690	10	832
Belize	3,543	7,615	17	443
Panama	6,606	14,199	34	421
French Guyana	3,704	7,961	20	398
Ecuador	3,545	7,620	7	1,089
Bangladesh	2,385	5,126	17	302
Burma	15,931	34,242	8	4,566
Thailand	896	1,926	1	1,825
South Korea	28,572	61,412	74	830
Japan	38,508	82,768	39	2,150
Angola	4,983	10,710	14	765
Uganda	4,156	8,933	18	496
Total Tropics	7,446,785	16,005,967	32,263	496

* By General Wholesale Price Index.

tariff numbers 44.03, 44.04, 44.05, 44.11, 44.13, 44.14)

COUNTRY	1987 Imports			Change in Price per Tonne (%)	Change in value of imports since 1977 (%)
	Value in IR£ 1987	Tonnes	Price per Tonne IR£ 1987		
Ivory Coast	7,694,556	25,524	301	-24	72
Ghana	6,618,665	17,993	368	-32	106
Brazil	3,815,511	6,413	595	13	-6
Europe	1,673,495	780	2,146	6	156
Malaysia	284,690	774	368	19	-51
Philippines	290,635	589	494	-16	-52
Nigeria	107,056	223	480	-21	-41
Congo	46,524	108	429	-63	1,893
Liberia	66,741	86	776	79	-71
Singapore	31,671	76	418	-9	-69
Zaire	19,322	20	966	—	—
Taiwan	17,888	17	1,058	63	10
Cameroon	364,336	574	635	76	4,381
Guyana	5,240	10	502	-23	-95
Kenya	8,092	6	1,349	73	-88
Mozambique	—	—	—	—	—
S.A. & Namibia	—	—	—	—	—
Argentina	—	—	—	—	—
Indonesia	—	—	—	—	—
Mauritania	—	—	—	—	—
Cape Verde	—	—	—	—	—
Central Africa	—	—	—	—	—
Somalia	—	—	—	—	—
Madagascar	—	—	—	—	—
Honduras	—	—	—	—	—
Belize	—	—	—	—	—
Panama	—	—	—	—	—
French Guyana	—	—	—	—	—
Equador	—	—	—	—	—
Bangladesh	—	—	—	—	—
Burma	—	—	—	—	—
Thailand	—	—	—	—	—
South Korea	—	—	—	—	—
Japan	—	—	—	—	—
Angola	—	—	—	—	—
Uganda	—	—	—	—	—
Total Tropics	21,044,422	53,193	396	-20	31.5

2.149 times in that ten year period. This compares with a consumer price increase of 2.752 times for the same period.

While imports of all wood raw material reduced by 23% in the period 1977 to 1987, imports of tropical wood increased by 64%. The imports from the Ivory Coast, the largest supplier, increased by 126%. Tropical wood imports therefore constitute an important and significant element in the overall wood imports. In 1977 it constituted 13% of the wood raw material imports. This had risen to 27% in 1987.

Table 2 gives the accumulated totals of tropical wood imports as obtained from custom tariff numbers. An examination of the custom tariff numbers (tariffs, 44.03, 44.04, 44.05, 44.11, 44.13, and 44.14.) reveal that tropical wood imports include wood raw material as well as manufactured and part manufactured products which often reappears in exports of wood manufactured products. From the descriptions given in the trade statistics it is difficult to ensure that the products within the custom tariffs and trade divisions are comparable in every respect for the years under study.

As can be seen from Table 2

– Ireland now import 86% of all her tropical wood requirements from three countries. (In 1977 the proportion was 72%.)

38% from Ivory Coast (27% in 1977)

31% from Ghana (20% in 1977)

18% from Brazil (25% in 1977)

– 58% of the remainder comes through Europe while the rest comes from 11 different countries;

6 in Africa

4 in Asia

1 in South America

– In the years 1977 – 1988, the value of tropical wood imports increased by 72% while the volume has increased by 65%. The price per tonne decreased in effect by an average of 20%. This price decrease varied from 32% in the case of Ghana; 24% in the case of the Ivory coast. Brazil, Liberia, Cameroon, Kenya, Malaysia recorded price increases in excess of 10%.

To put this into context, in the ten year period under review Ireland experienced a drop of 15% in the price paid for wood raw material while the export of Irish wood raw material had a drop of 9%. Exports have therefore been doing comparatively well.

On the other hand tropical countries get 20% less for their wood, the Ivory Coast and Ghana getting 24% and 32% less respectively. This explains the use of considerably more African Wood than was used in 1977.

Ecological effects

Apart from the economic consequences of such importations there are ecological consequences also.

It is estimated that the average production per hectare i.e. harvestable wood from mature tropical forest is about 20 well scattered cubic meters. The remainder of the forest is of low quality and is invariably felled and, if not used for either fuelwood or charcoal, is burned on site.

The volume of tropical wood imports was 53,193 tonnes in 1987, a direct conversion at the rate of 20 tonnes per ha. gives a tropical forest area of 2,700 ha. per annum to meet Irish needs. However some of the import tariffs include elements of processed wood e.g. parquet flooring etc and the conversion factor of 20 tonnes per ha. is unlikely to be correct. An area closer to 4,000 ha. or even greater is more likely. Whether all this area represents permanent destruction of the tropical forest resource cannot be definitely stated. There have been considerable efforts made in many parts of the tropics to redress the destruction of forests. Of necessity there has to be a reliance on exotic species such as Eucalyptus for the reforestation efforts. This in turn can affect the flora and fauna associated with these natural forests and can indeed threaten the genetic diversity which is regarded as the reason d'être for all conservation.

The role of Ireland and Irish Foresters

In satisfying our tropical wood demands we are using the equivalent production of about 10 hectares (almost 25 acres) of tropical forest per working day. We are using it in the redecoration of our pubs, our shop fronts, our offices, our homes, our Universities and even our picket fences. Our demands increased by 64% in ten years. If we are to reduce this demand we must look for substitute or alternative supplies. We know that we can produce wood in Ireland at a greater rate than almost anywhere else in Europe, but can we substitute any of this wood to reduce our hunger for tropical woods?

Most of our present wood production is in two species Sitka spruce and lodgepole pine which at present, helps to supply more than 50% of our sawn wood requirements. We expect a doubling of our home grown wood supply in the next 10 years and a tripling within the next 20 years. Most of this wood will be used in the non-visible end of timber use i.e. roof trusses, conventional rafters, joists and general construction. At present approximately 4 cubic meters of wood is used in the average house construction. Taking conversion and other losses into account, this is broadly equivalent to the annual production on one hectare of Irish forest.

Use of alternative species

Up to now very little lodgepole pine has been used in joinery. Recent research into the uses of lodgepole pine has shown that the species can

replace imported red deal for joinery purposes. The species has another attribute, it is decorative and given a change in wood use fashion, it could be used as a decorative wood in panelling.

Within the next ten years a radical change in our dependancy on tropical woods for decoration could shift to lodgepole pine and Douglas fir if there is a demand that these species be used, which could come about with a real increase in the price of tropical woods.

Ash grown to veneer quality could find a ready market as a substitute for much of Ireland's tropical imports. At present Ireland is largely dependant upon the United States of America for most of her joinery ash. Traditionally in Ireland ash is grown for hurley manufacturing which has a different rotation length to that required for decorative, veneer or joinery purposes. As yet very little genetic or tree improvement work has been done with this species in Ireland. In effect Ireland is dependant upon wild stock for seed with little more than the broadest of phenotype selection. Recent times has seen the import of ash seedlings from Europe which in time may improve selection processes.

If an impact is to be made upon the importation of decorative woods genetic research must continue on ash, cherry, and sycamore together with those conifer species with potential, Douglas fir and lodgepole pine. Ireland could stand to win handsome markets for quality material in the years ahead when the market experiences a world shortage of quality hardwoods. Tree improvement work on sweet chestnut and oak, could prove to be worthwhile but in the context of the longer rotations necessary for these species, they are unlikely to receive major attention unless there is a new realisation of the future economic benefit of broadleaf production.

Our national effort should provide for the replacement for our dependency on tropical wood. A strategy orientated towards quality broadleaf production should receive priority. To date calls for broadleaf production has been primarily made by conservationists with particular emphasis upon indigenous species. While this may be a valid conservation objective, the economic realities (within which Irish foresters must operate) are that broadleaf production cannot at present compete with conventional conifer species. With the disappearance of much of the tropical forests, a new urgency exists to provide for the demands of the future where wood usage will make new demands upon quality, particularly visual quality. Our indigenous species can provide for this market niche. They will not do so however unless there is a substantial increase now in investment into tree improvement.

Ireland's Contribution to Development

Ireland has had a long tradition of contributing to the development of emerging countries, particularly in areas of education and the spread of

Christianity. Latterly, Ireland has engaged in other activities more closely associated with economic development. However, as yet only a handful of Irish foresters have had the opportunity of working in developing countries. In tandem with other disciplines, foresters are the appropriate people to comprehend the problems associated with deforestation; and while most Irish foresters may not be familiar with the vagaries of tropical forestry practice, it is not in either the nature or tradition of Irish people, and Irish foresters in particular, to shun challenges.

We must recognise the legitimate right of tropical wood exporting countries to harness their forest resources, in fact it is right that we encourage them to do so but only within the context of sustained yield management. Given the opportunity to serve as part of Ireland's contribution to aid programmes, I would expect that many of our foresters would play their part in helping to redress the silvicultural, economic and social problems associated with tropical deforestation.

Writing in 'The Foresters Journal' in 1918 about the destruction of Irelands forest The Marquis MacSwiney of Mashanaglass said,
"Time has come for action, for immediate action, there is not an instance to be lost. It rests with us to repair the damage done and to provide for the future; it our duty to do so and we cannot fail in this sacred duty without incurring the legitimate reprobation of generations to come."

Time has come for action today in a much larger theatre. The commitment that served to lay the basis for Ireland's forest industry today can now help to lay the foundations of change in those countries which face social, economic, and ecological disaster by our hunger for the fruits of their forests. Our foresters can provide that commitment given the opportunity to do so. The future awaits their service.

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Feller Productivity in First Thinning Systems

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Introduction

Systematic thinnings, in particular 1-in-3 line thinning, have been applied on a widespread basis in Ireland at first thinning stage. However the risk of windthrow associated with such thinnings has renewed interest in making first thinnings more selective (Gallagher, 1987). In the north west of the country, pure selection thinnings are presently being applied with extraction most commonly by horse or cable-crane (Phillips, 1987). In other areas susceptible to windthrow, rack and selective thinning systems are being used. However, it is expected that the widespread application of these systems will influence feller productivity. This paper describes a study that was carried out to quantify the effects of thinning systems upon feller productivity.

Methods

Time study technique: As part of the project, a time study was carried out on the felling operation. Two people participated in this, one person was responsible for the timing of the operation while the other measured the mid-diameters of the pieces cut from each tree. The aim of this time study was to relate the time taken to fell a tree to the volume of that tree and thus determine feller productivity as follows:

$$\text{Productivity (m}^3\text{/minute)} = \text{Volume(m}^3\text{)}/\text{Time(minutes)}.$$

The felling operation was divided into sub-elements. The purpose of this was to identify which sections of the felling operation were influenced by thinning systems. The sub-elements chosen and their definitions were as follows:

1. Walking: – the time taken to walk from a tree that had been processed to the next tree to be felled.

2. Clearing: – any time spent clearing in preparation for tree felling e.g. removing branches from adjacent trees if they obstructed the felling of the tree being studied. It also included the time required to clear brash off piles.

3. Brushing: – the time taken to remove branches from study trees up to a point approximately 1.3 metres from the ground.

4. Felling: – included the time taken for the undercut and felling cut.

5. Downng: – the time taken to push or pull down a tree that became hung up.

6. Limbing: – the time spent removing limbs and branches from a tree and the time taken to crosscut it into the required lengths.

7. Bunching: – the time taken to bunch the pieces cut from a tree.

8. Urea: – the time taken to apply urea to stumps.

9. Productive delay: – the time spent on delays that were a necessary part of the entire operation such as refueling or chain sharpening.

10. Unproductive delay: – the time spent resting or talking.

The Husky Hunter micro-computer, in conjunction with a work study programme (SIWORK) developed by the Danish Institute of Forest Technology, was used to time the operation. Three-metre pulpwood lengths were cut on the sites and the mid-diameters of these pieces were measured with calipers. Once the data were collected they were transferred from the Husky Hunter onto the mainframe computer at University College Dublin, where they were analyzed.

Description of study: A preliminary study was carried out in Ballyfin Forest, Co. Laois. The purpose was to give an indication of how future studies should be carried out and to establish the approximate plot size. From the data collected, it was shown that plots should consist of 50 trees in order to be able to predict productivity with a precision level of 10% and a confidence level of 90%. It also became clear that the plots should be replicated.

Two further studies were carried out in Ring and Mullinavat Forests. Ground conditions on the two sites were relatively similar. Both were located on level ground which had been ploughed with either a single mouldboard (Ring) or a double mouldboard plough (Mullinavat). The crops being thinned were seventeen-year-old Sitka spruce of yield class 24 in Ring and 22 in Mullinavat. Three thinning systems were examined on these sites, namely, 1-in-4 line thinning (system 1), racks 1 line in 10 with chevron thinning (system 2), and racks 1 line in 9 with selective thinning (system 3). Selection in the latter system was carried out by the forester. On these sites, extraction racks were cut across plough ribbons. In each forest two fellers operated in the three thinning systems and each plot (feller/system combination) was replicated three times. This gave a total

of 18 plots on each site. In the rack and chevron thinning, the chevrons were cut at a 45 degree angle to the main racks. The timber was extracted across the plough ribbons with a Valmet 872K. The total number of trees studied was 2,029.

During this study no cognisance was taken of safety that the fellers adopted. However it was apparent that they did not vary their approach to safety in the different thinning systems.

Results

The mean volume per tree, mean time per tree, and mean productivity were examined for each thinning system. These means are presented in Table 1.

Table 1: Mean Volume, Mean Time, and Mean Productivity for each Thinning System.

Thinning system	Mean Volume per tree m ³	Mean Time per tree mins	Mean Productivity m ³ /hr
Line 1 in 4	0.0702	4.0558	1.0385
Rack + chevron	0.0691	4.2244	0.9814
Rack + selection	0.0554	4.1461	0.8017

An analysis of variance (ANOVA) showed that there were significant differences between the mean productivity data. Further analysis confirmed that feller productivity in systems 2 and 3 was significantly lower than that in system 1 (5% and 23% respectively). Productivity in system 3 was also significantly lower than that in system 2 (18%). Analysis of the volume and time data showed that mean volume per tree differed significantly between systems, i.e. the volume in system 3 was significantly lower than in either system 1 or 2. On the other hand, thinning system did not have a significant effect on the mean time spent per tree.

The means of the sub-element times in the three thinning systems are presented in Table 2. Downing time was the only sub-element time shown to be significantly affected by thinning system. Analysis of the data showed that more time was spent taking down hung up trees in systems 2 and 3 than in system 1.

Three members of the Development Division of Coillte Teoranta timed and rated the fellers as they operated in each thinning system. They produced work values for each system using data collected from 12 plots. The

Table 2: Mean Sub-element Data (in minutes) from Ring and Mullinavat forests.

Sub-element	Thinning System		
	1-in-4	Rack + chevron	Rack + selection
Walking	0.1296	0.1306	0.1407
Cleaning	0.1133	0.0799	0.0851
Brashing	0.4453	0.4475	0.4437
Felling	0.2386	0.2375	0.2050
Downing	0.2187	0.3240	0.3498
Limbing	1.7837	1.7896	1.6083
Bunching	0.5945	0.5440	0.4798
Apply Urea	0.1104	0.1082	0.1129
Prod. delay	0.1892	0.2923	0.2160
Unprod. delay	0.2325	0.2708	0.5048
Time	4.0558	4.2244	4.1461

means of these work values, in standard man hours per m³ for systems 1, 2 and 3 were 1.27, 1.38 and 1.48 respectively. These data indicate that productivity in system 3 is 17% less than that in system 1 while productivity in system 2 is 9% less than that in system 1. These results compare well with the results that this study produced, i.e. 23% and 5%, respectively (from Table 1).

Discussion

Examination of the time and volume data of each system offers an explanation as to why productivity varies as it did. The mean volume per tree was 21% less in the selective system than in the line thinning system, but there was very little difference in the time spent per tree between these systems. These results seem to contradict the usual trends in time and volume data where cutting time per tree increases as the volume per tree rises (Bol and Gerritsen, 1960). In this study, it appeared that cutting time for smaller trees was similar to that for larger trees. However, working conditions in an area being selectively thinned differ considerably from those in an area being line thinned. During selective thinning, fellers

have to operate in unbrushed rows and fell and take down trees where there are no breaks in the canopy. The results confirmed that downing time was significantly greater in the selective system than in the line thinning system. Thus, although the average volume in selective thinnings may be smaller than in line thinnings, the unfavourable nature of the working environment in such thinnings outweighs any advantages that these smaller trees may offer the feller with regard to cycle time. This explains why productivity in the 1-9 selective system was significantly lower than that in the line thinning system.

The slight difference between productivity in the rack and chevron system and in the line thinning system can be attributed to the problem of taking down hung up trees. Trees tended to get hung up more often in the chevrons because of the limited felling space.

The differences in results between the rated and the unrated data can be explained by the manner in which rest was accounted. In this study the actual time that the feller spent resting, was measured. On the other hand, personnel from Coillte Teo. added a rest allowance of 30% in all thinning systems. As the actual amount of rest time required in each system varied, the results from the two sets of data varied.

Conclusion

In this study feller productivity is shown to be 23% lower in a 1-in-9 rack and selective system than in the line thinning system. Feller income would fall accordingly if fellers were to operate in such systems. The questions of whether fellers should be compensated for doing so, by increasing the piece rate paid to them and who should pay for this compensation, remains unresolved.

It is likely that with training, feller productivity in rack and selective systems will increase. In addition, some of the problems that fellers encounter when operating in these systems would be alleviated if they were allowed to select stems for felling. This would require additional training. Both the cost of training and an increase in piece rate to compensate for reduced productivity, could be offset against the reduction in marking and brushing costs.

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Deer in Northern Ireland Forests: Distribution, Impact and Management

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Summary

Red, Fallow and Sika deer occur in Northern Ireland forests. Fallow, often associated with old estate deer parks are most widespread; Sika occur in large numbers in Tyrone and Fermanagh, while Red are a comparatively minor species slowly spreading in from Donegal.

Economic damage in coniferous woodland has been relatively light arising mainly from the activities of male deer cleaning velvet and marking territories. Lodgepole pine is particularly susceptible to damage by Red and Sika deer.

The essence of good deer management lies in the design of more open forests enabling the deer to be observed, assessed and culled as necessary. Deer have an important educational and recreational role within forestry.

Introduction

The comparatively large increase in the area of forested land over the past thirty years has probably resulted in more deer than ever before in Northern Ireland. Forestry plantations form an almost ideal habitat for deer by providing shelter, good feeding and concealment. Land tenure patterns have resulted in many of the larger forests being put together by an amalgamation of small farms. This has produced a situation where deer can extend their range by colonising nearby new plantations. Whitehead (1964) gives an account of the deer herds throughout Ireland before large scale afforestation took place.

Distribution

All three species of deer which occur in Ireland Red, Fallow and Sika are present in Northern Ireland forests to a greater or lesser degree. Fallow are the most widely distributed, Sika are confined to Tyrone and Fermanagh while Red are relatively minor species in terms of numbers in the forests. Kilpatrick (1986, 1987) in a series of articles in *Deer* traces the evolution of deer in Ulster from the 17th through to the 18th and 19th centuries culminating in a detailed assessment of the herds in the 1980s.

Arguably the finest Red deer in Ireland are confined within the deer park

of Caledon estate. It is only rarely that one of these animals escapes from the park and any which do are shot by the estate keeper as soon as possible. This park does not therefore provide a source of Red deer to colonise the forests of south-east Tyrone.

In County Down near Ballynahinch there is a herd of Red deer owned by the County Down Staghounds. This herd is one of only two in Ireland (the other being the Ward Union in County Meath) which hunt the carted stag. Occasionally a stag evades recapture and there are many records of individual outliers living in woodlands throughout County Down. This never posed a problem until ten years ago when the Staghounds moved their enterprise to a new location. During the catch-up in the original park a number of hinds escaped, eventually made their way to the private woodlands around Seaforde to be subsequently joined by a few outlying stags. Nowadays there is a small but very successful herd of Red deer building up in the sanctuary

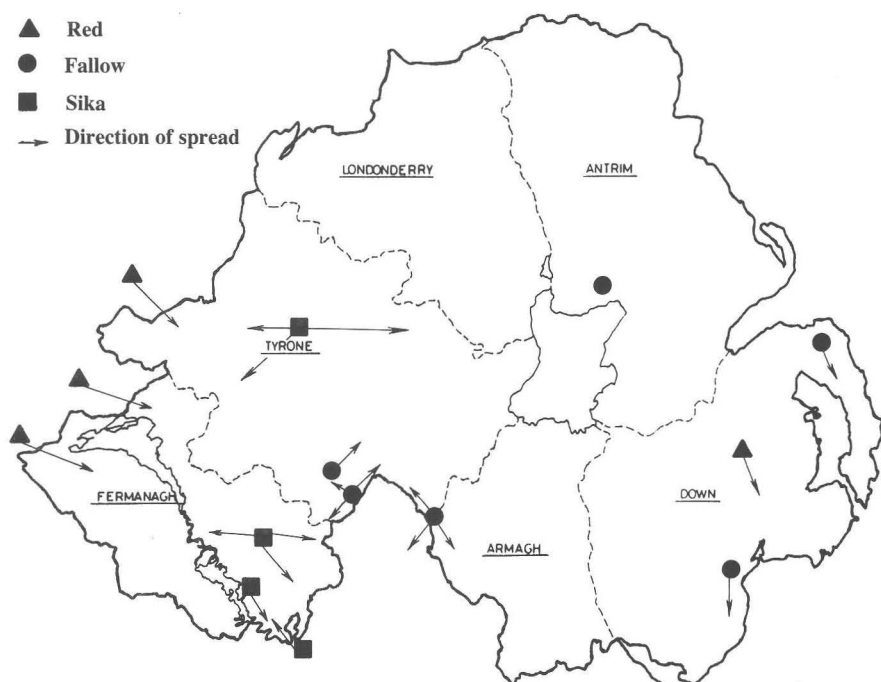


Figure 1: Location of main herds and direction of spread.

of the broadleaved woodlands of Seaforde Estate and lying out in summer in adjoining State plantations.

The only truly wild Red deer in Northern Ireland occur in the forests of Tyrone west of Castlederg and within the vast coniferous plantations of West Fermanagh both north and south of Lower Lough Erne. The ancestors of these deer colonised the forests from Donegal where they would have been descendants of Red deer escaping over many years from the vast area of what is now Glenveagh National Park.

The widespread occurrence of Fallow deer can be directly linked with the old estates. In the past any large estate worth its salt possessed at least one deer park which, more often than not, contained Fallow deer. These were regarded as the most attractive of the deer species as well as providing superior venison for the big house. Deer park fences inevitably fell into disrepair, deer escaped, many of the estates were broken up, often to be purchased by the Government for forestry, with the result that the new plantations were rapidly colonised by resident Fallow deer.

Fallow occur in the forests at Randalstown in County Antrim; Clandeboyne and Tollymore Park in County Down; Caledon and Favour Royal in County Tyrone; Crom Castle and Castle Archdale in County Fermanagh. All of these have an association with an old estate at some time in the past.

The introduction of Japanese Sika deer into Ireland is already well documented. Suffice to say ten years after the original introduction into County Wicklow in 1860 Lord Powerscourt was in a position to supply Sika to his friend Sir Victor Brooke at Colebrooke in County Fermanagh. Some twenty years later in 1891 a similar transaction saw Sika introduced to the Duke of Abercorn's estate at Baronscourt in County Tyrone. The deer did exceptionally well in both new locations to the extent that in the mid 1970s there were at least a thousand Sika in the general Baronscourt area and a further three hundred at Colebrooke. A policy of very heavy culling for a number of years at Baronscourt reduced the herd to more manageable proportions.

Sika deer, particularly the stags, are great colonisers. Emanating from the two sources of Baronscourt and Colebrooke these deer have extended their range eastwards to Gortin Glen forest near Omagh, Davagh Forest near Cookstown, west to Killeter Forest on the Donegal border and towards Rosslea and Lisnaskea in south Fermanagh. There are even reports of a small number of Sika resident in forestry areas around Pettigo in south Donegal. Colonisation northwards towards County Londonderry would seem to be curtailed by the lack of suitable woodland habitat within range.

Impact

The presence and impact of deer in forestry can often lead to exceedingly heated discussions among professional foresters. Attitudes can range from "the only good deer is a dead one" to "the Bambi syndrome" which sees

deer in the Disney image of a very attractive inoffensive woodland animal.

Insofar as growing trees is concerned it really depends what species is being grown. Even in a situation of extreme pressure such as Baronscourt damage of economic importance is not a serious factor on Sitka spruce. Minor local fraying damage can occur adjacent to rutting stands. Norway spruce is more vulnerable to both fraying damage and browsing. Young pliable larch is particularly favoured by male deer both for fraying when cleaning velvet in August and again when marking territories in September/October. Lodgepole pine suffers from the whole range of deer activities: browsing, fraying, bole scoring and bark stripping, particularly by Red deer. *Tsuga*, of the minor conifer species is particularly vulnerable.

Pressure from the conservation lobby has increased the importance of growing broadleaves. This is the aspect on which major conflict between forestry and deer is likely to occur. The fact that the establishment of broadleaves will take place on the better soils, often in areas previously associated with the old estates, means that Fallow are more likely to be the deer involved. Fortunately in comparison with Red and Sika, Fallow tend to be more grazers than browsers, although they will certainly eat young shoots of oak and beech and positively seek out ash and elm. The use of tree shelters, providing they are of adequate height, offers an additional method of protecting young broadleaves. Deer fencing is exorbitantly expensive so a reduction in impact of deer on broadleaved plantations is best achieved by good deer management. Prior (1983) discusses at length many alternative methods of minimising deer damage. His philosophy of damage avoidance is 'Don't fight nature – encourage it to go away'.

Management

The essence of good deer management is that you must be able to see the animals within the confines of the forest. To attempt to manage deer in the old style wall to wall conifer forest is an almost impossible task. The forester establishing a new forest must ask the question "are deer likely to colonise the forest during this rotation?", or indeed when clear felling creates the need for the second crop. New forest design must ensure adequate open spaces are left along roads, streams and around old wallsteads where the deer can be seen, assessed and culled as necessary. In established plantations the deer themselves will select their own special areas, often rutting stands, where they will defy the forester to establish trees. These often small locations should be surrendered to the deer and incorporated into a matrix of deer management areas covering the whole forest. Access for the stalker to these open areas is vital. The planting of non-commercial species particularly willow will reduce the pressure of fraying and browsing on the commercial crop.

Legal protection for deer was late in coming to Northern Ireland, it was only with the advent of the Wildlife Order in 1985 that close seasons and

the minimum calibre of weapons to be used in deer control were laid down. The last deer drive to shotguns took place within the Forest Service in 1965. Two years later it became official policy that deer would only be shot with full bore rifles and close season as laid down by the English Deer Act 1963.

The vast majority of deer culled in Northern Ireland State forests are shot by trained and experienced members of Wildlife Branch. Deer stalking is not leased but there is a scheme whereby visiting stalkers pay a fee to be taken out by a Wildlife Warden to shoot part of the normal cull. They must provide their own weapons and be fully insured. No unaccompanied stalking is permitted.

The Forest Service is keen to utilise the educational potential of deer. Three small deer parks at Randalstown, Parkanaur and Gortin Glen forests have existed for many years in which the public and in particular school children are guaranteed to see Fallow or Sika deer. A new park for Red deer was established at Gosford Forest Park in County Armagh in the autumn of 1989.

Deer have an immense value in forests such as Tollymore Park where public recreation is a major aspect of forestry. They do not have to be confined in a park. Even a glimpse of a deer bounding across a ride line or standing partially concealed among the trees can create a lasting favourable memory of a visit to the forest.

Deer numbers should not exceed the carrying capacity of their habitat. It is better to have a small number of well managed deer which everyone can regard as an asset, rather than a surplus, creating unacceptable levels of damage with everyone's hand against them. That is what good management is all about.

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Notes

PREVENTING DEER DAMAGE TO DOUGLAS FIR BY POWER FENCING

Sean Lenihan

Ballinglen forest, Co. Wicklow

Deer damage has been a problem, to a greater or lesser extent, in Ballinglen forest for the past fifteen years. Up to 1980, the main species affected was Sitka spruce, and although severe bark stripping occurred in many cases, by and large the trees survived and recovered.

Serious and permanent damage to crops started in the 1980s. This coincided with the use of Douglas fir in the reforestation areas and a large rise in the Sika deer population. Within 2-4 years of planting, 40% of trees died with the remainder forming multi-leadered bushes with no silvicultural potential.

This note describes measures taken to prevent damage.

Type of Damage

Bark stripping usually started at or near the root collar and continued up the stem with some or all of the bark being removed (Fig. 1). Once ringed, the tree died immediately. Unlike hares, it was very rare for deer to break off the leader or main stem. However, strong winds will cause breakage in trees of 6 years and over, where stems and leaders have been weakened by bark stripping, and decay has set in.

Scale of Damage

Approximately 40 of the 60 ha reforested with Douglas fir since 1980, have suffered severe damage. Half of this area was replanted with Douglas fir and has in turn been attacked by deer for a second time, despite increased deer



Figure 1: Typical damage to young Douglas fir outside power fence.

cullings. It was therefore decided to erect a purpose-built electric fence in an attempt to overcome the problem and this was completed in the spring of 1988.

Fence Design

The fence design is based on a specification used by the Rutland Electric Fencing Company, Scotland and has been used by the Forestry Commission in Scotland for some years. It consists of an outer fence 1 metre high with four strands of live wire, and an inner fence 1 metre high with three strands of live wire (all wire 2.5mm high tensile). The span between the outer and inner fence is .65 metres (Fig. 2). The fence is supported by stakes at not more than 20 metres apart. Larch stakes were

used in Ballinglen, although purpose-made Insultimber Stakes are available; these last longer but are more expensive. The fence is powered by a heavy duty 12 volt battery and an energiser; the battery normally lasts one month. The area fenced in is 6.0 ha, all Douglas fir reforested in 1988. The total length is 1200 metres, and based on experience, will need to be operational for up to 10 years. One permanent stile/ladder set in concrete was also constructed to facilitate normal management and the changing of the battery every month.

Cost

The total cost of the fence was £3,900 (£3.35 per metre). This figure breaks down as follows:

- (1) Materials (including 2 x 12 volt batteries, 1 energiser, 1 battery charger and 1 security box) – total £1,100.
- (2) Labour 405 S.M.H. at £6.90 S.M.H. = £2,800.

Fence line cleaning (24%), and stile construction (7%), accounted for 31% of the SMH used. Maintenance of the fence will be in the region of £350 p.a. This includes an annual straying of Roundup on the fence line, changing the battery monthly, and the cost of charging, plus regular inspections for damage to the fence and to check for earthing at any point.

Results to Date

The fence has been in operation since July 1st 1988 and so far the results have been very impressive. There has been no deer damage and no sign of any incursions as evidenced by the complete absence of tracks and droppings. This contrasts sharply with Douglas fir



Figure 2: Layout of power fence around Douglas fir plantation.

re-afforestation planted in 1988 in an adjoining property not fenced in by a power fence, where to date, 40% of the trees have been "damaged".

From a Management point of view the electric fence has been a complete success and has made the re-afforestation of Douglas fir in this part of Wicklow, a viable, silvicultural proposition once again. Whether or not it is viable economically, bearing in mind the cost per metre, is a matter for debate. One thing is certain though, it will not be possible to grow Douglas fir again in Ballinglen, unless the deer problem is brought under control, and based on results to date, power fencing is the only means by which that can be achieved.

Conclusion

Considering the fence also acts as a – sheep and cattle barrier, the cost of £3.25/m, although high, is not really

expensive. However, if it is seen to be excessive, then surely part or all the cost could be recovered from a premium charged on the timber produced throughout the rotation.

There will always be a strong demand for good quality Douglas fir and if it is going to cost more to produce it, then like any other product, a higher price will have to be obtained at the end of the day. The alternative is to abandon the establishment of Douglas fir in its traditional high yielding area i.e. most of Co. Wicklow. This hopefully will not come to pass, as it would not be in the best interests of the grower or the timber trade.

Finally, the Ballinglen experience with power fencing has been very successful and consideration should be given to using this method of preventing deer damage on a large scale.

FROM THEN TO NOW

Recent developments in Irish forestry

Declan Ward

Modern forestry in Ireland usually traces its origins to 1904, with the purchase of the Avondale estate in County Wicklow by the Department of Agriculture and Technical Instruction. However, forestry activities had an earlier beginning in the previous century.

During the second half of the 19th century an interest was developed in reversing the almost complete deforestation of the country. In Britain, focus on the unsatisfactory nature of national timber supplies was provided by the Royal Arboriculture Society in Scotland from 1854 and from 1881 by its counterpart in England. In 1883, the Crown Woods Commissioners began experimental planting on its mountain lands in the Isle of Man. The House of Commons appointed a Select Committee in 1885 to investigate forestry conditions. Dr. William Schlich, a leading German authority on scientific forestry, reported in 1886 that if afforestation in Ireland was approached judiciously and carried out economically, then it would prove of eventual value to the country. He concluded that the Government would have to take the initiative and suggested an outline organisation for a Central Authority, headed by a board and led by a Chief Forest Conservator (Durand, 1969).

Discussion on developments over much of the next one hundred years can be found in Durand (1969) and

various papers published in this journal and elsewhere. In 1979, the National Economic and Social Council published "Irish Forestry Policy": a review of the potential and implications of forestry for economic and social development in Ireland. During 1981, the Industrial Development Authority produced "Developing the Irish Timber Industry for the 1980s". With these publications, and an increasing volume of timber becoming available, the debate on forestry in recent times had begun, mirroring the interest given to it during the same period in the previous century.

During 1983 and 1984 there were a number of significant developments: the publication of "The Case for Forestry" by the Forest and Wildlife Service (FWS) and "Ireland's forestry - a review" by the Union of Professional and Technical Civil Servants (UPTCS) both in 1983; and, the establishment by the Government, in November 1984, of a Review Group on forestry, following on the publication of the Government's National Plan: "Building on Reality".

Much of the debate was concerned with organisational issues. Re-organisation had been discussed before. The setting up of a semi-autonomous body had first been suggested in the 1930s and again in the 1950s, when it found favour with many politicians. The basic argument in those times was directed to the

success of Bord na Mona (The Irish Peat Board) and that of the Electricity Supply Board (Durand, 1969). However, nothing was done.

Convery (NESC, 1979) was convinced that the Civil Service dual management structure was not the best structure with which to handle State forestry in Ireland and wrote that a two-tier system exacerbates the natural "territorial imperative" instincts, which are a feature of all organisations. He proposed a Governmental initiative to produce an organisational shift from the Civil Service framework to a more modern, integrated and effective management system. UPTCS (1983) stated that State forestry should be a productive business concern rather than a service organisation. That publication also pointed out that forestry activities were being carried out by a field organisation with administrative staff predominantly employed at a headquarters, while the majority of the professional and technical staff worked in the field. This last point, it was emphasised, tended to intensify the division which a dual management structure creates between administrative and professional/technical staff.

The terms of reference given to the Review Group were: (1) to examine the present structure, organisation and operation of the Forest and Wildlife Service of the Department of Fisheries and Forestry; (2) to consider what changes, if any, are necessary; and, (3) to make specific recommendations on such changes.

Reporting in November 1985, the Review Group proposed that State forestry should be run on commercial lines. Among its findings it reported that the FWS had no clear mandate to operate commercially; and, that the FWS, integrated into a Government Department, had a management structure that

hindered it from being run as a profit-conscious business. The Group recommended that the organisation be restructured within the Civil Service and proposed the setting up of a commercial body, called the National Forest Enterprise which would have the status of a commission.

However, announcing its plans early in 1987, the Government decided to establish a commercial state-sponsored company. The Forest Service was separated from the Wildlife Service, moving to the Department of Energy in 1987. The Forestry Bill passed through both Houses of the Oireachtas during 1988, becoming the Forestry Act, 1988. The company also acquired its name at this time: Coillte Teoranta – The Irish Forestry Board.

Coillte was launched in December 1988, while the company came into being on 1 January 1989. The 11 January 1989 saw the appointment of Martin Lowery as Chief Executive (Irish Forestry, 1989: Issue 1 of this Volume).

Ireland's State forestry had entered its own perestroika.

Acknowledgment

Thanks are due to Dr. John F. Durand for permission to use his unpublished Ph.D. thesis for reference purposes.

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Briefly . . .

Leaf Litter Effects

Experiments at the Welsh Plant Breeding Station have examined the consequences of tree leaf fall for the underlying pasture Agroforestry systems. They have shown that sycamore leaves suppressed both grass and clover growth, probably as a result of smothering. Larch needles, however, were less damaging – the needles, by settling at ground level, did not smother the sward and actually resulted in increased herbage weight and clover stolon length. This may have been as a result of nutrient leaching from the litter. Alternatively the larch needles, by settling at ground level, may have afforded some insulatory protection for overwintering stolons.

Timber Grower, Spring 1989.

'Glyphosate has minimal impact on ecosystems'

A new Canadian study represents 'the most complete assessment on the impact of a herbicide in a forest ecosystem anywhere in the world'. This is how Monsanto describes the results of a research project at Carnation Creek in British Columbia evaluating the impact of forest harvesting and other forest practices on salmon and salmon habitat.

The Canadian government – through its forestry, fisheries, environment and parks agencies – undertook a three-year study to understand the effects of glyphosate on a forest ecosystem after an aerial application of Monsanto's Roundup. It indicated a 'favourable environmental profile'.

Main findings were: rapid breakdown of the herbicide after spraying; unlikely that Roundup would affect aquatic organisms after use at recommended rates; neither glyphosate nor its major metabolite persisted in soil or leaf litter; it has a small transient effect less than that caused by soiled water variations; no residues detected in invertebrates

or fish. Conclusion: Glyphosate 'has minimal impact on forestry and aquatic ecosystems'.

Forestry and British Timber,
November 1989.

Eggs to Repell Browsing Animals

New Zealand's forest scientists are using eggs to repell rabbits and hares. This is not as far-fetched as it seems. Recent trials testing a range of animal repellents have shown that the following recipe gave considerable protection against browse on winter planted trees.

80gms egg powder
800 mls water
or
5 fresh eggs
600 mls water
150 mls acrylic resin
or
150 mls acrylic paint.

Egg powder: Mix powder with some water to form a paste and add remaining ingredients.

Fresh eggs: Beat eggs well. Add remaining ingredients.

Spray 20mls/tree immediately after planting. May need to re-apply in spring.

What's New in Forest Research,
No. 162, 1988.

Improved Specifications for Rabbit Fencing

The need to protect young trees from damage has and will increase as a result of recent policy on broadleaved and farm woodlands in Britain. Fencing is a necessary but expensive protection measure.

Trials were conducted to establish specifications for wire netting rabbit fences that were cost-effective. Cost-effectiveness was measured in terms of price per metre and effectiveness as a rabbit barrier. Mesh sizes

of 31mm (hexagonal) 50 x 25mm (rectangular) were required to exclude all age classes of rabbit. Fence heights of 0.9m, the commonly accepted height, and 0.75m were equally effective, excluding more than 90 per cent of adult rabbits in enclosure trials and about 80 per cent in field trials. The 0.75m fence cost was 6 per cent less and therefore more cost-effective.

Forestry, Vol. 61 (4), 1988.

Nylon Stockings to Protect Against Pine Weevil Damage

The effectiveness of a stocking, constructed of nylon and cotton netting, in protecting containerised conifer seedlings against pine weevil attack was evaluated in field tests on 37 clear-cut reforestation areas in southern and central Sweden. The stockings significantly reduced pine weevil feeding on treated seedlings as well as seedling mortality. The protective effect of the stockings was similar to that of an insecticide (permethrin) treatment. In most experiments the survival of stocking-enclosed seedlings was satisfactory from a practical point of view, whereas untreated control seedlings suffered heavy mortality.

Scand. J. For. Res. 4: 1989.

Beetle War Continues

Spread of the great spruce bark beetle – *Dendroctonus micans* – is being contained within the area of its original infestation – most of Wales and the English border counties. 'No change to the scheduled area boundary is necessary', the Forestry Commission says.

But spruce timber movement will remain strictly controlled in several counties. 'An essential part of the overall control strategy', the FC's plant health branch says, 'is the "approved mill" scheme' in which only certain mills (now 61 in the scheduled area) can process spruce wood from infested stands under strict, laid-down criteria.

Research into the use of biological control to fight the beetle with the help of the predator

Rhizophagus grandis will continue, the FC says. Field evaluation of promising chemicals to attract *Rhizophagus* will be conducted in 1989.

Forestry and British Timber,
September 1989.

Tolerance to Sitka Spruce Roots to Waterlogging

Recent research by the Forestry Commission has shown that Sitka spruce roots were damaged much more by waterlogging in October than in November.

The practical implications of this research indicate that on wet sites deeper root growth, and an associated improvement in tree stability, might be achieved if drainage could delay re-wetting of the soil in autumn. The results also indicated features of the tree's growth which could improve rooting depth.

Fast root growth through spring and summer, and early cessation of growth so that roots are inactive when the water-table rises in the autumn, would enable roots to survive to greater depths. There is a possibility of screening clones for the desired growth characteristics.

Forestry Commission
Research Information Note 154.

Hopper Modification For Grey Squirrel Control

A new modification to hoppers, used to contain Warfarin bait for squirrel control, has been developed by the Forestry Commission's Wildlife and Conservation Research Branch.

During the past two years, a modification – a flap-door fitted to the hopper's entrance tunnel – has been developed and tested. The flap-door is hinged at the top, made of clear perspex and has a magnet attached to its base.

The magnet gives an initial pull equivalent to a 300g weight which is sufficient to deter small mammals. The magnet overcame any possible resistance that a squirrel may have

had to a weighted door resting on its back while feeding.

Hoppers with flap-doors have the potential to eliminate the risk of poisoning small mammals and their predators and should make the use of Warfarin more acceptable as a control measure for squirrels.

*Forestry Commission
Research Note 153.*

Using Low-Quality Timber

A new technology that converts low-quality timber resources into new wood and fiber composite materials is under development by Bernard C. Sun of Michigan Tech University's School for Forestry and Wood Products. The copolymerisation process uses plentiful subsawlog-grade timber resources to make a composite material that is strong, durable, and decay-resistant.

The product has the strength and physical properties of aluminium and plastics but requires only a fraction of the production costs. Estimated raw material costs are 10 percent of those for aluminium and 40 percent of those for scrap steel. Additionally, the material's short production time and the absence of air and water pollution as byproducts of the production process make it a preferable alternative to currently available technologies.

Jour. of Forestry, Vol. 87(ii), 1989.

Gripping Fencing Idea

The demand for an easier, quicker and more effective alternative to wire twisting when erecting stock fencing and three years of development work has led to the Gripple system from Estate Wire, based at Birley Vale Close, Sheffield.

In filmed tests, a professional erector using Gripple fencing completed the entire joining and adjusting of two lengths of fencing in just 10 seconds. His average time when twisting together eight joints was 10 minutes.

The new wire jointing device is cast in one piece. The wire to be joined is pushed in through either end of the Gripple and is locked into place when either end is ten-

sioned. Any wire from 1.2 to 3.2mm can be joined including high tensile wires and two wires of differing diameters.

Mr. Hugh Facey the inventor of the device was a finalist in the 1989 Prince of Wales Awards for innovation and production.

Forestry and British Timber,
September 1989.

Irish Oak Comes of Age

Archaeologists and historians have long dreamed of being able to date objects exactly. Now, seasonal growth rings of Irish oaks can be used to give an exact calendar year date for many sites and artifacts, as well as providing information on historical events such as, ancient volcanic eruptions and on climate.

Scientists in Queen's University Belfast working with Irish oak samples constructed a tree-ring chronology stretching back as far as 5289 BC precisely. The process involved matching tree-ring patterns on oak timber samples of increasing age. Timbers for 18th century building provided the link from the modern tree-ring patterns. Further links from these timbers provided a chronology back to the mid 14th century. Samples from the extensive urban excavations in Dublin provided another link to the 10th century. The timber crannogs dated back to 855 AD. It was discovered that English and German chronologies dated exactly with the Irish chronology.

Using trunks from early Christian sites it was then possible to extend an archaeological chronology back to 13 BC. Links were made from there to bog oak and the year 5289 BC. German chronologies extend it by a further 2,000 years to 7200 BC.

Samples of oak from every 20-year period of the last seven millennia were isolated from the chronological record and radio carbon dated. The data were used to derive an internationally accepted radio carbon dating to be used by archaeologists worldwide. With this calibration it is now possible to date archaeological sites and artifacts with greater precision. It is also possible for the chronological record to very accurately date

historic buildings, and climatic changes that have occurred over the centuries.

Technology Ireland,
May 1989.

Stihl Have Edge on Chain

Metallurgical engineers at Stihl chainsaw's research and development centre at Stuttgart, Germany have produced a cutting edge for chain which, it is claimed, will cut ten times longer than normal chain before needing to be sharpened.

The new chain 'HMC' (hard metal chain) follows the company's 'Oilo-matic' chain construction system but, in addition, each cutting edge has a tip of precision-ground carbide. 'Unlike normal chainsaw chains which must be frequently sharpened using a special file, HMC will last ten times longer before sharpening is necessary on special workshop grinding equipment', Stihl say.

This new chain is being manufactured at its own chain factory in Switzerland for Stihl and any other type of chainsaw using $\frac{3}{8}$ in .063 gauge chain. 'This innovation in chain development will be welcomed by all users of chainsaws, particularly professional foresters and local authority contractors', they add.

Forestry and British Timber,
February 1989.

Storage of Acorns

The seeds of oak are very sensitive to low moisture contents and reduced germination can be expected from spring sowings of poorly stored acorns.

Research by the Forestry Commission into the storage of *Quercus robur* acorns over the winter period has shown that, if at all possible, the moisture contents of the seed should not fall below 40%.

Germination percentage can be significantly improved for acorns with a wide range of moisture contents by rapid imbibition, brought about by soaking in water at $+2^{\circ}\text{C}$ for 48 hours.

If it is known that a significant amount of drying has taken place before acorns have been received, a preliminary soaking before sowing is likely to be beneficial. Similarly if sowing does not take place immediately, then the same soaking procedure coupled with bagged storage (loosely tied polybags kept at $+2^{\circ}\text{C}$) is likely to prolong storage life.

Forestry Vol. 62(i), 1989.

Forests to Offset the Greenhouse Effect

Analysis of the relationships between forest and climate suggest that plantation forests may offer a means for postponing by 3 to 5 decades the buildup of atmospheric CO_2 . This would give sufficient time for society to develop alternative energy sources to carbon releasing fossil fuels. An estimated 465 million hectares of fast growing plantations in the temperate zone, established at a cost of at least \$372 billion, or \$186 billion (tropics) would be required to sequester the 2.9 billion ton annual increment of carbon in the atmosphere. The area required is about 1.5 times the total currently forested land in the US, or 10% of the current area of forest worldwide.

Journal of Forestry,
July 1989.

Stump Treatment is Vital

A recent review of all information available from observations and experiments, conducted in Britain over the past two decades, suggests that the present low level of *Fomes annosus* in British plantations will only be maintained if stump treatment is continued.

The review concluded that the cost of stump treatment was fully justifiable. It recommended that all conifer stumps greater than 2.5cm in diameter should be treated immediately after felling with an effective chemical or biological agent to prevent infection by spores.

Forestry and British Timber,
May 1989.

Forestry in the News

Roche – Destruction of our Woods

Compensation, which was used in the case of Coollattin Wood, is now again being used in the case of Tomnafinnogge to produce the most extraordinary and bizarre twist of events, Wicklow T.D. Dick Roche claimed in a Dáil Debate.

Mr. Roche was speaking on the 1988 Local Government Planning and Development Bill, now before the Dáil, which inter alia addresses the thorny compensation issue.

"Coollattin is another planning disaster and one where we can never reverse the clock" he said in the debate. "In that planning disaster the bludgeon of compensation was used to push ahead with the most wanton and wholesale destruction of something which was unique, which was part of our heritage, which merited preservation, which would have had endless commercial possibilities in its preserved state if Messrs Bridge Farm Limited, the people behind the destruction, had had the sense and the wit to look for an alternative way of using their resources.

"But no, compensation was again used in the case of Coollattin and it is now being used in the case of Tomnafinnogge to produce the most extraordinary and bizarre twist of events", he said.

Mr. Roche went on: "This case has adopted a peculiar sinister twist in that the fear of compensation has at this very moment forced the county council, who have made an amenity order to protect

Tomnafinnogge, into the courts against third party objectors who have taken a case to An Bord Pleanála.

"In this case the third party objectors, including myself, are objecting to a consent granted by the planning authorities, again granted in fear of compensation to the so-called developers" he added. "It is my belief that the developers, who have devastated Coollattin and who have plundered the magnificent oak woods, should not be let within five miles of any tree with a buzz saw in their hands."

Mr. Roche, who was pleased to note that senior members of the Government shared his concern, said "that the irony in the case of Tomnafinnogge and of Coollattin was that the very county council which should be defending these woods now found themselves by a perverse twist of fate in the courts assisting the very dirty work which the elected representatives in Wicklow wished to resist."

"Such is the ridiculous level to which the compensation issue has reduced the local authority" he said. "We are not the only Council that finds ourselves in a difficulty on the compensation issue. Every planning authority finds themselves in that situation."

*Bray People,
8th January 1989.*

Strategy for Developing Forestry

The European Community is increasing its aid for expansion of the area under trees at a time when considerable effort is going into the reduction of output of most farm produce and a recent communication from the Commission to the Council sets out proposals for a strategy and action programme for the forest sector.

The Commission has put forward a number of principles and aims on which the strategy and action programme should be based. They include the need for unification and coherence of the programme for the different subsectors of the forest industry – seed producers, nurseries, public and private forests, and so on – as well as solidarity between all sectors, and continuity of the programme over a period of years.

There are eight aims outlined. They include the full participation in land use planning and encouragement of the development of rural life through the involvement of forestry in regional development; the securing of supplies of raw materials; the contribution to

environmental improvement; the provision of its own dynamism to the forestry sector; the protection of the Community's forests against major damage; the extension of the role of the forest as a natural setting for relaxation, recreation and culture; the participation in development in the most disadvantaged areas in the world; and finally, giving the forests and the forestry sector their full place in the formulation and implementation of Community policies by taking better account of the sector's prospects and constraints.

Work to be done is outlined, including the improvement of the infra-structure, such as access roads and the public transport network; the rationalisation of parcels of wooded land to create forest management units; the promotion of modern techniques of protection, silviculture and processing; the harmonisation of national rules governing forests; the location of industries; the promotion of organisations, such as forest-owner associations; and the better development of forest products in the Community.

The Commission has also proposed that member States be required to adopt provisions governing afforestation, principally to prevent patchy afforestation of the countryside, which would run counter to improving silvicultural and agricultural productivity and might lead to a deterioration of the landscape.

*Carlow Nationalist,
13th January 1989.*

West Ignored In New Forestry Board

The fact that the newly appointed state Forestry Authority Coillte Teo does not have even one member from the Roscommon/Mayo/Galway region has been severely criticised by Mr. Michael McGreal M.C.C.

Cllr. McGreal who has been campaigning to have the Headquarters of the New Authority located in Castlereagh said this week that the make up of the new body, with the majority of its members coming from Dublin and the East, gives little reason to build on the small glimmer of

hope that existed for Castlereagh.

It is unbelievable, Cllr. McGreal said that the entire Galway/Mayo/Roscommon Region which had the largest block of forestry in the country had been deprived of membership of the new Government appointed Authority.

The new Authority was clearly Leinster orientated despite the dominance of forestry in the West.

It is indeed very hard to understand that County Meath which has the lowest acreage of forestry of any county in the country (710 hectares) had a member appointed to the board and Dublin which has the 3rd lowest acreage had three members appointed. This was, said Cllr. McGreal, another example of neglect of the West.

*Roscommon Champion,
13th January 1989.*

£1 Million Forestry Deal Unveiled

The largest private investment in Irish forestry yet, totalling £1m was announced yesterday by Glenasack Forestry Investment Company of Glenville, Co. Cork. The seven-figure investment by a private investor is almost unique in a sector which until now has been dominated by the financial institutions.

Glenasack managing director, Mr. Tom Collier, said yesterday that he expected that 1,500 acres the company would buy and develop on the investor's behalf would be worth £1.7m in 10 years time, and £6.9m in 35 years time, without taking inflation into account.

The investment had been made by Curtharda Investments, a company formed under the aegis of accountants Arthur Young O'Hare Barry, to channel funds from a number of private investors into forestry.

Glenasack has been involved in forestry since 1983 and already acts on behalf of a number of leading financial institutions.

The Company's chairman is Mr. Tom Cavanagh, of Fermoy, well-known in Cork business circles and a director of AIB.

*Irish Press,
14th January 1989.*

'BLACK' FOREST

Over 1,000 people are involved in black economy operations in the forestry industry, Deputy Richard Bruton declared in the Dáil yesterday. He was asking the Minister what steps he was taking to eliminate the practice.

Mr. Aylward replied that the difficulty lay in the employment of operators and individuals to harvest timber. However, he said the Department of Social Welfare were doing all in their power to stamp the practice out.

*Cork Examiner,
4th February 1989.*

Timber Sales Topped £22m Last Year – Aylward

Sales of timber from State forests generated £22m last year Forestry Minister Liam Aylward proudly told the weekend's *Fianna Fáil Árd Fheis* in Dublin.

Outlining the success of Ireland's forests, Deputy Aylward noted that forestry now generated direct employment for 6,000 Irish people and approximately half the public forest estate was producing saleable timber which was supplying two pulp mills, and 25 sawmills.

"The quality of timber products from these mills is top class and their share of the home construction market is now 60 per cent, four times the 1980 level" he said.

The south Kilkenny deputy explained that the national planting target of 11,000 hectares was achieved in 1987 and had reached an all-time high of 15,000 hectares last year. The 1988 figure included the planting of 5,000 hectares by the private sector as business confidence had grown, translating

into increased investment, output and employment.

Ireland still imports £30m worth of sawn timber annually, but the Minister noted that the increasing amounts of mature timber scheduled to be harvested from our forests in the coming years would help reduce this figure.

Quality timber was a major requirement of the industry, he said, and to encourage this, all structural timbers – both Irish and imported – have had to meet strict conditions set down by the National Standards Authority of Ireland since January. The Minister believed this would help Ireland's drive to gain access to markets in the UK and mainland Europe.

The formation of the new State sponsored body *Coillte Teoranta* in January also represented a new phase in the development of the Irish timber industry. "The increasing marketing of our forest estate and the continuously increasing volume of timber becom-

ing available from our forests make it opportune to give the activity a strong market oriented and commercial focus" Deputy Aylward said.

While the Government was pressing ahead with the development of public forestry, it was also taking positive steps to sustain the momentum which had built up in private forestry in recent years. He predicted that private sector planting would increase to 6,500 hectares this year – an increase of 1,500 hectares on 1988 and the revised grant schemes would have a role to play in this regard.

Minister Aylward also noted that a major drive for increased EC funding had also begun, as forestry uniquely met all the current policy objectives of the EC in areas of regional and national development.

In the medium term, he envisaged a three and a half fold increase in the level of EC funds devoted to forestry between now and 1993.

*Kilkenny People,
10th March 1989.*

Forest Move Gets Council Backing

Mayo County Council is backing a call to have Letterkeen forest, Newport, be declared a forest park area.

This was agreed at a meeting when Mr. Frank Chambers outlined the asset which the amenity was to the region.

Ireland West Tourism was supporting the idea and the

area was of prime importance as an attraction for visitors.

It was one of the most scenic areas in Mayo and held tremendous potential for development.

"The council should recognise this as a unique piece of

beauty within the county which has not been exploited," he said.

The project was listed as part of the application for EC Structural Funds.

*Connacht Telegraph,
8th March 1989.*

Uproar But Forest Prices Fall

Admission charges to Dun-a-Ri Forest Park, Kingscourt, which have caused a storm of protest in the area, have been reduced.

Coillte Teoranta, which took over the forest parks from 1st January last, has set the charges at £2 per person; £5 for a family and £15 for a season ticket or for a coach group.

The charges caused uproar among the local community who have been using the facilities of the park for many years.

Now the charges have been reduced to £1 for an individual and £3 for a car and passengers.

The bus and season ticket charges remain at £15. Children are admitted to the park and its facilities free of charge.

A spokesman for Coillte Teoranta said the charges cover car parking facilities. Even at £15 the season ticket represents good value for locals who are able to visit the park as they please during opening hours.

*Meath Chronicle,
8th March 1989.*

Developments in Coillte Teo

The ICTU have formed a Committee composed of all Unions with members in Coillte. The Committee will be responsible for the co-ordination of policy on all matters relating to forestry and the affairs of Coillte, with the exception of pay and conditions. A draft constitution for the Group has been drawn up and arrangements are in hand to have this constitution adopted.

On 15 March the Congress launched a policy document on forestry called 'A Future for Forestry'. The main elements which are called for in the ICTU programme are:

1. A planting programme of 30,000 ha of new land to be afforested annually.

2. Increased timber production from the current level of

1.3 million m³ per annum to a sustained rate of 25 million m³ by the year 2040.

3. An immediate creation of at least 2,000 new permanent jobs.

4. A massive increase in harvesting and processing jobs as the new plantings begin to produce timber.

COLERAINE FIRM BOUGHT

Chipboard firm Spanboard based in Coleraine is being bought from Aaronson Bros. by Portuguese group Sonae Industria e Investimentos for about (Stg) £8.4 million.

Last full year figures at Spanboard showed profits before tax of £573,000 were earned on turnover of £14 million in the 12 months to September 30th. Net assets at the balance sheet date were £3.59 million.

*Irish Times,
29th March 1989.*

5. Both public and private sectors to be involved, with a major role to be played by Coillte.

6. A national land-zoning policy for forestry to be adopted to ensure conservation and amenity interests are safeguarded.

7. Stringent measures to be taken to ensure that the black economy is eliminated from the programme as virtually all afforestation, public and private is funded by the Irish or European Community taxpayer.

8. The planting of broad-leaves to be given a high priority.

9. Comprehensive planning and research must be carried out to ensure even growth in the processing industry to maximise jobs and other benefits to the economy.

*Public Services Review,
April 1989.*

Finsa's £3m Investment on Target

Finsa Forest Products Ltd. the Scariff based chipboard manufacturer has accepted final deliveries of energy generation and drying plant as part of its current £3m investment programme. Construction is on schedule and will be commissioned before summer.

The new equipment will allow Finsa to generate energy from factory waste for its drying facility. The company employs 150 people at Scariff, manufacturing added value chipboard products such as malamine and special veneers for the construction and furniture industries. An additional 150 are employed in wood forestry and distribution. Seventy per cent of Finsa production is absorbed by the Irish market and the remainder is exported to Britain and Northern Ireland.

Finsa Forest Products Ltd. purchases fifty per cent of its raw material (pulp timber) from Coillte Teo., the State Forestry organisation and the balance from the sawmilling industry in the form of residues.

*Clare Champion,
14th April 1989.*

Tripartite Meeting on Damaged Forest Roads

Anger was expressed at a meeting of Leitrim County Council on Monday over the damage being caused to roads in the county by trucks involved in the extraction of timber from State forests.

Councillors also vented their annoyance with the decision of Coillte Teoranta to spend the county's £60,000 allocation for repair of forest access roads on one particular road in North Leitrim without consulting the local authority.

Coillte has decided to spend £60,000 developing a road at Meeneymore, Glenfarne, but the Council is up in arms because it feels the local authority should decide where the money is to be spent.

In attendance at Monday's meeting were Coillte representatives, Messrs. C. Lynch and J. A. Mannion, who responded at length to complaints from councillors about the damage being caused to county roads by trucks owned by private timber hauliers and contractors involved in bringing in materials to construct forest roads.

North Leitrim members said the main problem areas in Glenfarne were along the Ballaghbehy/Briscloonath road and Blackrock where the bridge was in bad condition. Also mentioned was the Darragoon area of Kiltyclogher.

Councillors complained that excessive weights were being carried by trucks, extracting timber and they wanted to know if Coillte could impose the legal weight restrictions on hauliers.

But Mr. Lynch responded that Coillte, while sympathising with the Council, could not enforce weight restrictions on timber loads; they were not an enforcement agency under the road traffic acts and it was up to the purchasers of the timber to obey the law.

He also rejected suggestions that Coillte had any responsibility for road maintenance. Their primary purpose was to sell timber and close the gap between expenditure and income.

Following a lengthy discussion during which a number of councillors stressed that they were not opposed to forestry, but felt the local authority should be funded to repair roads damaged during timber extraction, it was decided to set up a tripartite meeting, involving the Council, the Minister for Forestry and Coillte to see if the Council could be given a slice of the £60,000 to repair roads in North Leitrim.

*Leitrim Observer,
15th April 1989.*

Bord na Mona and Coillte Teoranta Redevelop the Peatlands

With only 5% of midland bogs remaining a resource, the other 95% having been cut away during the last 40 years, it now seems that the bogs themselves, if the present rate of utilisation continues, will have been exhausted as a resource by the mid 1990s.

Now the problem facing those previously involved in the exploitation of this resource is what could replace the peat and turf industry as a major part of the Irish economy. This question was tackled recently by the Minister for Forestry, Mr. Liam Aylward T.D., at the launch of a new report on "The Utilisation of Irish Midland Peatlands".

As outlined, both in the report and in the Minister's speech, the most effective way of cushioning the blow that will be dealt to the Irish economy by the disappearance of the peatlands, is to begin work, even now, developing this great natural resource create possibly the base for what could even be greater national assets. With this end in mind, it was decided last year that all Bord na Mona cutaway

bogs suitable for afforestation should be turned over to Coillte Teoranta – the Irish forestry board for forestry purposes. This decision was taken for three reasons. Firstly to provide immediate employment for those previously involved in the industry and who would face redundancy were the exhausted bogs to remain undeveloped, secondly because of the particular suitability of the timber crop to the midland area and lastly because of the economic viability of such a crop.

Coillte Teoranta themselves recently made clear their intentions as regards the development of forestry as a viable new departure in the immediate future. Established to run public forestry on a commercial basis their plan is to double the

1988 planting levels by 1993. They can only be aided in this by what promises to be full co-operation from those who can allocate to them the necessary land to make possible this form of development. The Chief Executive of Coillte Teoranta, Mr. Martin Lowery in particular is enthusiastic about the prospects of his company's success in view of the co-operation they are receiving from all other sectors in their efforts to establish forestry. They can then only be further aided by the guarantee of the government that they should receive up to 60% of Bord na Mona cutaway bogland over the next 10 years.

Should the co-operation between those involved in the development of the peatlands and those in Coillte Teoranta continue, the optimum re-use of peatlands is assured and midland forestry could help to replace midland peat as an important indigenous resource.

*Evening News,
7th April 1989.*

Germans' £m plus Forestry Negotiation

Negotiations for a £1.6 million plus forestry development for County Cork are at an advanced stage.

A meeting took place in Fermoy, this week between a West German group, the Bavarian Timber Growers Association, and Tom Collier, General Manager of Glenasack Forestry Company, Glenville.

The significance of the meet-

ing was underscored by the fact that also present were forestry Minister Liam Aylward, T.D., and Dr. Edward Farrell of UCD.

Chairman of the Glenville-based Glenasack Forestry Investment Company, Tom Cavanagh, said that members of

the Bavarian Foresters' Association visited Fermoy this week at the invitation of Glenasack which hopes to persuade the group to invest in Cork.

They were met by Forestry Minister Liam Aylward, T.D., Dr. Edward Farrell of UCD, Tom Collier, General Manager of Glenasack and Chief Inspector of Forestry Niall O'Carroll, Gene Fitzgerald, MEP and Deputy Ned O'Keefe.

Tom Cavanagh said Glenasack is hopeful the Bavarians

will lease land in County Cork which the company would then plant with trees and manage for an annual fee. However, he added that it is still too early to say

whether the Bavarian group will go ahead with the investment.

*Corkman,
5th May 1989.*

Emerging Co-operative Growth Sectors

Mr. Martin Lowery, Chief Executive, Coillte Teoranta, at a Seminar on "Emerging Co-operative Growth Sectors" organised by Irish Co-operative Organisation Society Limited emphasised the importance of the recently published National Development Plan, 1989-1993, for forestry development. He said that Coillte Teoranta, the newly established commercial forestry company, welcomed the planting target of this plan – a doubling of 1988 national planting levels of 15,000 hectares to 30,000 hectares by 1993. Coillte Teoranta was prepared to play its full part to ensure that public planting made a major contribution towards the achievement of this target.

Coillte Teoranta was established to run public forestry on a commercial basis. The new company is gearing itself to that task. Its immediate priority is to ensure

that its core business is efficient and to install commercial structures to increase efficiency levels and take full advantage of its commercial status.

Mr. Lowery considered that there was considerable scope for a closer working between Coillte Teoranta and the co-operatives in achieving their common interests. The company had an enormous reservoir of knowledge and expertise in the establishment and management of forests – an area where it takes years to rectify initial mistakes – and could provide relevant services to co-operatives and, indeed, private forestry investors in general. There were possibilities for joint ventures or partnership arrangements with the co-operatives in regard to a range of forestry activities. These could extend, as necessary, to innovative ways of making land available for forestry through, for example, leasing arrangements between Coillte Teoranta and farmers/co-operatives.

*Dungarvan Observer,
6th May 1989.*

New Concepts for Forestry on the Farm

Mr. Bulfin, Head of Forestry Research, Teagasc, Kinsealy Research Centre, said in a paper presented to the "Trees of Ireland" AGM that the climate of opinion has never been better for the promotion of forestry on the farm. With the changes in EC policy towards agricultural surpluses and the introduction of quota restrictions and the partial removal of price supports for some commodities, farmers see the need

for alternative enterprises. On most marginal farms, whose soils have physical limitations for other forms of cropping, forestry is the only alternative enterprise. Planting grants, income supports and advisory services have all been put in place or increased in the last few years.

Media coverage of forestry has increased considerably and helped to create a favourable climate of opinion and yet the level of farmer involvement in forestry has not reached expected levels. The answer lies in the difference between State

or investment forestry and farmer forestry – the farmer must make an annual income from his forest. If farmer forestry is to be successfully promoted the farmers must be financially supported while his trees are growing. If the EC and the national government wish to promote farm forestry, then they must support farmers who switch to forestry at least to the same level as similar supports being offered for farmers still in agriculture.

Teagasc is carrying out research on a number of forest systems suitable for farms. Much of the land coming out

of agriculture will be marginal land with major physical limitations for cropping. Tree species – and a very limited range of tree species – will be the only feasible alternative enterprise. Coni-

fer forestry, with Sitka spruce as the major species, will be the major forestry system. On some of the better – but still marginal land – a much wider range of species will be possible.

New forestry systems such as short rotation forestry for energy and pulp or Agroforestry for high value timber may be feasible.

*Tipperary Star,
20 May 1989.*

Forest Fire Raged for Five Hours

A forest fire which raged for five hours destroyed an estimated 90 acres of mature forestry at Glountanefinnane, Ballydesmond on Tuesday.

The fire was brought under control by almost 100 fire fighters from both sides of the Cork/Kerry border.

The alarm was raised at lunchtime when local farmers saw the plantation blazing at three points, and 50 firemen rushed to the scene from Kanturk, Millstreet, Mallow, Charleville and Castleisland.

They were joined by forestry workers who assisted with beaters and shovels to prevent the fire from spreading.

At one stage a 6,000-acre plantation on the other side of a fire-break was threatened, but the fire was controlled.

*Donegal Democrat,
2nd June 1989.*

Enterprise Equity Invests in Leitrim Firm

Enterprise Equity (Irl) Ltd., the Venture Capital Company, established by the International Fund for Ireland, (which operates in Counties Leitrim, Cavan, Donegal, Louth, Monaghan and Sligo) announced that it was investing IR£250,000 in A. S. Richardson & Co. Ltd., of Newtowngore. The Chief Executive of Enterprise Equity, Dr. Declan Glynn, in making the announcement stated that A. S. Richardson & Co. Ltd., was a good example of a company with strong committed management which should contribute significantly to the local economy and employment over the coming years.

The Leitrim-based sawmillers who have recently acquired and re-equipped a mill in Sligo are particularly attractive from the point of view of Enterprise Equity in that their products are based on a native raw material which is of increasing importance nationally but also to the economies of the border counties. "The products not only substitute for hitherto imported materials but are themselves exported in increasingly significant quantities", said Dr. Glynn.

Leitrim Observer, 3rd June 1989.

Forestry Central to Economic and Environmental Planning

The forestry industry is a very important part of our economic and environmental planning for the future, said Minister for State Michael Smith yesterday.

Launching a comprehensive development plan to take Irish forestry up to 1993 he said that almost 2,300 jobs would be created between 1989 and 1993.

He said that the next phase in forestry development would see a doubling of planting levels from a record 15,000 hectares in 1988 to 30,000 hectares in 1993 which would be achieved through a combination of public and private planting.

More forest roads to be constructed, harvesting and marketing programmes to be increased by 33% to 2 million cubic metres by 1993 and sufficiency in sawn softwood to be increased by 60% to 80% by 1993.

*Cork Examiner,
9th June 1989.*

New Pinewood Mill for Thurles

Announcing a new Pinewood Mill which will employ between 25 and 30 people between now and next Christmas and with a potential for up to 100 jobs, Mr. Michael Smith, stated that this was a small but very important and prestigious project for Thurles. Negotiations had concluded between the Sugar Company and the parent Company Ballycassidy Mills, Enniskillen, Co. Fermanagh on the acquisition of 5 acres on the Sugar Factory site and an option to purchase an additional 10 acres. The mill will be housed in one of the bays and weighbridge and parking area will be fully utilised in the new industry.

Twenty six per cent of our forests are pine and up to now this timber has been mainly used for low added value timber products. The new Mill and the second and third phase of these developments will ensure that this very valuable wood will be used for joinery and high quality timber products, mainly for export.

*Nenagh Guardian,
10th June 1989.*

Strokestown Company's Success Story

A Strokestown-based forestry company, comprising former FÁS trainees, is fast becoming one of the success stories of the North West.

Ashling Woodland Development was the brainchild of five young people, who met during a woodland management course run by Crann, the Woodland trust, at Killegar, Co. Leitrim, in 1987.

The Strokestown company was recently shortlisted for the Board Gais/An Taisce Resource Ireland Environmental Awards, receiving a prize of £500.

During their studies with the Leitrim-based group, they identified a gap in the market for increased private planting, a lack of a service company catering for large-scale planting, maintenance and management for broadleaved woodland.

While working with Crann, the trainees were taught the benefits of broadleaf trees over conifers. Although conifers are faster growing, they are less environment-friendly.

"We are aiming to redress the balance in planting, from both a landscape and ecological point of view. Our target is 50 percent

broadleaves," said Joe Gowran, Joint Manager of AWD.

Because broadleaves are seen as less commercially viable than conifers, one attraction lies in the investment opportunities they present: "If you spent about £1,200 now on planting, provided the conditions were right, those trees could be worth about £12,000 in forty years' time," Joe estimates.

They are popular for people who wish to invest in their children's futures, although many stems are usually of reasonable value after thirty years. Joe sees substantial employment potential in broadleaves, not only from planting and harvesting, but also from creating recreational sites for the likes of fishing and shooting, etc.

Having planted over 124,000 trees between November and May, the group are anticipating further growth next year.

"On a conservative estimate, I would expect to expand by about fifty per cent by spring 1990," Joe reckons. The co-operative also has plans to employ new members, extend their transport fleet, computerise their accounts and contracts, and begin a nursery.

With endless enthusiasm, and the appropriate expertise, this group of young people are set to make their mark on one of Ireland's growing industries.

*Leitrim Observer,
1st July 1989.*

Public Sworn Enquiry Hears Evidence on Wood

A special amenity area order made by Wicklow Co. Council in May 1987, in respect of Tomnafinnoge Wood, part of the Coolattin Estate, was the subject of a public sworn enquiry at Shillelagh Courthouse on Tuesday and Wednesday, June 27th and 28th.

The two-day enquiry was held before Mr. Michael Ward, an inspector with the Department of the Environment.

Wicklow Co. Council is seeking to have the special amenity area order confirmed by Environment Minister Padraig Flynn.

Bridgefarm Company Ltd. of 89 Upper Leeson Street, Dublin 4, the owners of most of Coolattin Estate, objected to the order.

Over the two days, the hearing listened to sworn evidence from

five witnesses – two from Wicklow Co. Council and three from Bridgefarm.

Additionally, there was an unsworn submission from Coolattin Woods Action Committee – a group which favours strongly the confirmation of the amenity area order.

Two further submissions were made by Mr. Leonard Mason, who described himself as a citizen of Shillelagh and by a Mr. Noel Kelleher.

*Carlow Nationalist,
7th July 1989.*

Major Improvements Planned for Lough Key Forest Park

Following mounting pressure from local associations and politicians Lough Key Forest Park in Boyle will undergo a major facelift in a bid to bring its facilities up to standard and to get the crowds rolling back in.

The lifeline for the park, where gate receipts have been sadly dwindling for the past four years, came this week from the Forestry Board, Coillte Teoranta. A new section within Coillte, New Business has been set up to examine Forest Park Development and Lough Key is one of three parks that will be receiving particular attention.

A spokesman for Coillte explained that facilities at the park needed upgrading urgently and they had met with the local Chamber of Commerce where ideas for development had been discussed.

As an immediate priority he stressed that the first item on the development list would be the Caravan and Camping area and following on from that they would be combining the findings of the Chamber's report with their own and implementing some new works.

However, before any work can be carried out, and they are hopeful that at least some of the works will be in place for the 1990 season, finance for

FOREST GRANTS

The Department of Agriculture for Northern Ireland has recently made the Environmental Assessment (Afforestation) Regulations (Northern Ireland) 1989 which implement the requirements of the European Community Directive No. 85/337. The Regulations apply to applications for grant aid for initial afforestation projects received by the Department's Forest Service on or after September 1st.

The Regulations prohibit the Department from making grants for afforestation projects where it appears likely that the planting will have significant effects on the environment unless the Department has first taken into consideration information as to the project's environmental impact.

The requirement for a forestry project to have a supporting Environmental Assessment will be considered on a case by case basis taking account of both quantitative and qualitative factors.

*Down Spectator,
20th July 1989.*

the project which they estimate could cost up to a half a million pounds over a number of years has to be located. "We are now looking at the various funding options open to us including the EC, Bord Fáilte and our own resources, but we have not ruled out the possibility of some type of private investment and we are always open to all offers," the spokesman added.

*Roscommon Herald,
21st July 1989.*

£1m Bill for Forest Fires in Fermanagh

Almost £1m worth of timber has been destroyed in forest fires in Fermanagh this summer.

A Forest Service official reported that about 250 acres of trees, valued at almost £1m, had been destroyed.

Fermanagh produces about 40% of the timber produced in

Northern Ireland and contains about one third of the State forests.

The spokesman said the ground was so dry that fires thought to be put out repeatedly flared up again.

*Belfast Telegraph,
28th July 1989.*

FORESTRY – A Need for Association for Small Forest Owners

Many farmers have now planted the marginal areas of their farms either individually or in groups. To help farmers to extract the maximum benefit from this investment there is a need for farmer forestry associations. These associations are now being set up. In structure they will be in the form of co-operatives, which will be affiliated directly to the Western Forestry Co-operative. Such associations would keep the farmers involved abreast with forestry developments generally, provide information on grants and forest related payments, and provide all the back up services required for forest management and marketing. They will also give collective strength to the small producer, act in a representative capacity to ensure that farmer and small forest owners get the maximum advantage from their forest crop.

Greatly Increased Acreage in Farmer Forestry

Since co-operatives like Kiltoghert, NCF, and Killeshandra have taken an active role (through the Western Forestry Co-operative), in private forestry development, farmer forestry is viewed in a new light. The objective of a planned approach to forestry development, with farmers and communities having an input, has been met with a very positive response. People who were

opposed (and understandably so) to the way private forestry was being developed are now supportive of the co-operative approach. Accordingly, despite the appointment of a highly experienced co-operative officer to County Leitrim, all requests from farmers and groups of farmers to have part of their lands planted could not be accommodated in the planting season just ended. The attractive co-op services included cheap in-

puts, free back up for the farmer equipped to carry out the work himself. It also provided a complete contrast service to establish and maintain the proposed plantation with no financial burden, for those without help. All the co-op requested was that the proposed development would compliment other developments, would not involve good grazing land and would include broadleaves in the species mix.

State Forest Approach

It is fully recognised that the great work being carried out in getting farmers to afforest the non-agricultural areas of their farms could not have been achieved without the positive co-operation of the State Forest Service – (now Coillte Teo). The officers involved in private afforestation have shown dedication, enthusiasm and helpfulness, and deserve to be congratulated.

*Leitrim Observer,
29th July 1989.*

FOREST PROJECT LAUNCHED

A unique tree-planting project is now underway in two of the country's most famous castles as a contribution towards restoring Ireland's forest heritage.

"Plant a Tree for Ireland" is a scheme devised by the Dromoland Castle, Co. Clare-based Forest Heritage Ltd. aimed at people of Irish ancestry living around the world and Irish people at home.

The trees will be planted in the 1,700 acre Dromoland Castle, Newmarket-on-Fergus. The other location chosen for tree planting is the beautiful demesne of Ashford Castle, Co. Mayo.

The cost of a tree is £125 which includes ownership of the tree for 100 years, the placing of a plaque on the tree with the owner's name engraved on it and maintenance of the tree for five years. The owner will also receive a certificate of ownership.

The types of tree available for planting at present are Common Beech, Copper Beech, Red Oak, Common Oak, Ash and Sycamore.

*Evening Press,
3rd August 1989.*

West Limerick Christmas Tree Boom

West Limerick is to become a major Christmas tree growing area, with the announcement recently that one and a half million trees are to be grown on 530 acres.

The company behind the venture – Kerry Tree Technology Limited are to continue exporting daffodils to the US following their success of sending one million flowers there this year.

Jim Costelloe, a native of Foynes, who manages the forestry-growing division of the Company, said that already 30 acres of Noble Fir Christmas trees have been planted in Athea, with more on the 170 acre site at Loughill where the daffodils are also growing.

The Christmas trees will be exported mainly to Germany and will take about 7 years to develop. An interesting aspect is that the foliage will also be exported as this is used as decoration on graves.

*Limerick Tribune,
5th August 1989.*

Galway Farmers 'Left Out in the Cold' by Forestry Body's Regulation

Outraged small farmers in County Galway claimed this week that they were being discriminated against by the new State forestry organisation, Coillte Teoranta.

They are angry at Coillte's announcement that they will only buy up plots of land exceeding 50 acres for forestry or plots over 25 acres if they are adjoining existing plantations.

Western farmers feel that this stipulation prevents them from selling up parts of their land, which is practically useless for viable agriculture, to the forestry agency in order to get finance to develop the better parts of their holdings.

Tuam County Councillor, Pat Finnegan has now taken up

the small farmers' fight against these conditions.

"It doesn't make sense that these conditions apply in the west of Ireland since the average holding is less than 40 acres and they don't stand much of a chance of selling smaller amounts of land for forestry," said Cllr. Finnegan.

He suggested that Coillte reduce their requirement to between 10 and 15 acres for farmers in the disadvantaged areas to give smaller farmers an opportunity to sell off land which they did not require.

Liam O'Flanagan of Coillte Teoranta said that it would be a totally uneconomic prospect for the organisation to undertake the planting of forestry on

an area any less than what was specified on their advertisement.

"Between administration costs and other overheads it would cost us the same to develop 10 acres as it would 100 acres for forestry," said Mr. O'Flanagan.

He said that farmers interested in selling off a small portion of their land for forestry could ap-

proach private forestry investors to see if they were interested.

But he said that the best advice for any small farmer was to advise an auctioneer that the land had become available

on the market for forestry and there was a possibility that private investors might become interested.

*Connacht Tribune,
25th August 1989.*

Ulster Farms Take Up Tree Scheme

Almost one thousand farmers, fifty-nine of them from Northern Ireland, have responded to the Government Farm Woodland Scheme, launched a year ago to encourage the growing of more trees.

Mr. David MacLean, Parliamentary Secretary at the Ministry of Agriculture in London said: "We have received nearly 1,000 applications to plant 17,500 acres of woodlands over the first three years of the scheme and we expect about 75% of this area to be

with broadleaved trees.

"These new woodlands will provide important environmental benefits both by enhancing the landscape and by creating new wildlife habitats."

He said they had decided to change one of the scheme rules

so that in future farmers with an interest in more than one holding would be allowed to submit a separate application in relation to each of their farms, subject to the maximum of 40 hectares per holding.

The scheme, an experimental one, came into effect last autumn with the aim of providing a maximum total area of 36,000 hectares for three planting, after which it will be reviewed.

While only 26 farmers, with an area of 186 hectares have taken up the scheme in Wales, 59 Northern Ireland applicants want to plant some 248 hectares.

*Belfast Telegraph,
31st August 1989.*

Ballyhooly's Eurocentre for Acid Rain Test

A group of scientists in the Faculty of Agriculture, University College Dublin, have established an intensive acid rain monitoring station in a forest at Ballyhooly, Fermoy, Co. Cork. The group, led by Dr. Ted Farrell, a forest soil scientist, have received an EC grant of £103,000 over three years to support the study. In a complex collaborative effort, soil scientists, forest scientists and physicists from UCD, Coillte Teo. (formerly the Forest Service), Thomond College and the University of Munich, are measuring concentrations of pollutant chemicals in the atmosphere and are monitoring the passage of rain-borne chemicals through the forest crown and their absorption by the soil.

The study plot at Ballyhooly is the first in what is intended to be a network of such monitoring stations in forest stands around the country. No damage resulting from the long-range transport of airborne pollutants has been observed in Ireland, but

these plots and a larger network of forest observation plots established by Coillte, will ensure that if any damage occurs it will be quickly identified and sources of pollution isolated.

The Ballyhooly site has been selected because of its similar-

ity in stand structure and soil properties to the Hogenwald site, near Augsburg, in Bavaria, where the acid deposition research work of Lehrstuhl für Bodenkunde, University of Munich, is centred. As a Norway spruce stand on a free-draining mineral soil in a relatively unpolluted environment, Ballyhooly can act as a control site for forest stands over much of Central Europe. The duration of the project is three years. It is the intention of the research team to extend the network of intensively monitored plots, by establishing another two or three on sites more typical in species composition and soil type, of Irish conditions.

*Environment Ireland,
September-October 1989.*

Dockland Dump for Trees

Scientists in Belfast are probing the possibility of turning the city's biggest rubbish dump into a forest.

The revelation follows yesterday's news that an industrial estate built on part of the dockland dump in Duncrue Street is now under threat from underground build-ups of potentially explosive methane gas.

Last night, a councillor for the area, Nelson McCausland, revealed that no more industrial units will be built on the rubbish tip stretching along the shore of Belfast Lough which flanks the M2 Motorway.

Councillor McCausland said: "A decision has been taken that it will be too dangerous to use the reclaimed land on the rubbish tip for further industrial development.

"Instead, the scientists have already moved in with an experiment to plant trees on the tiphead.

"Experiments have suggested so far that such a base is ideal for growing trees. The type of rubbish now being thrown out by people is apparently good for growth when it eventually breaks down in the soil."

*Irish News,
September 1989.*

Farm Ministers Agree New Funds for Forestry

EC Farm Ministers have reached agreement on a multi-million pound programme for the development of the Community's forest and forest products industry.

The First Action programme will run from 1989 to 1992 and is aimed at encouraging forestry development on what was formally agricultural land. This is seen as an important plank in the Commission's attempts to reform the Common Agricultural Policy while at the same time providing alternative employment and activities for rural communities.

Under the new programme, special areas like Ireland which have been chosen for structural assistance will be given special aid for forestry development. The Government is hopeful of securing £89 million over the next five years. The Minister of State at the Department of Energy responsible for forestry development said that the agreement was "crucial to the Government's aim of expanding Irish forestry, creating new jobs, doubling planting targets to 30,000 hectares per year and increasing timber by one-third."

*Business & Finance,
September 1989.*

Forestry Report Highlights Problem

A report by Landwise Scotland, following a study tour of farm forestry systems in Western Europe, claims that simply subsidising farmers to plant trees will not produce successful farm forestry.

The report said that many farm forestry systems in Western Europe are in serious trouble and 'unless the lessons highlighted in this study are taken account of, farm forestry we are creating in Scotland will end up with the same problems'.

The study showed that many farm forestry systems in West-

ern Europe were facing major economic and social problems due to small scale forests, the disruption of the traditional complementary relationship between farming and forestry due to changes in both industries and shifts in the population between country and town.

Small scale foresters were having to compete with large scale producers of timber in selling a low value product on to a highly competitive world market and the problems of that small producer were extremely acute.

The report also claimed that it could not be assumed that a farm forestry system would necessarily be beneficial to landscape and wildlife. Among the recommendations to the report are:

The aims of a farm forestry system must be clearly established from the beginning and the woodland structure created around them.

Forestry co-operatives must be established to allow small scale growers to compete in the marketplace.

Effective extension services

are of key importance and such financial support may be more important for success than direct subsidies.

Movements of populations between country and town and change in the nature of agriculture and forestry have been affecting the changing farm forestry systems in Europe for

more than 100 years and this process will continue. Any farm forestry systems must therefore have maximum flexibility so it can adapt and persist long enough to produce timber.

*Mid Ulster Observer,
7th September 1989.*

Coniferous Forests Can Threaten Fisheries

Coniferous forestry can be incompatible with maintaining salmon and trout fisheries, the Institute of Fisheries Management study course in Galway was told on its final day yesterday. Mr. Brian Morrison, of the Department of Agriculture and Fisheries for Scotland, said that the worst effects of afforestation only became apparent 15 or more years after planting, when the leaf canopy closed. At this stage, there could be a marked increase in the acidity of the water and the level of aluminium it contained.

If the water became too acid, the fish fry were unable to hatch from their eggs because the enzyme they used to remove the shell was neutralised, he said. He compared the delayed action to that of a time bomb.

"Conifers are not the primary cause of the problem," he told the meeting, explaining that acidity would only rise to fatal levels if the soil was shallow, well leached, and overlying insoluble rocks. Where it was over rocks containing lime there would be less effect.

Dr. Nigel Milner, of the Welsh Water Authority, said that 25 per cent of the Welsh uplands had been afforested. "Fish and forestry are in direct collision there," he said.

As a result, his authority had commissioned the Institute of Terrestrial Ecology to prepare a map showing areas of low calcium soil where afforestation should be restricted to avoid acidification. However, the Forestry Commission did not accept that there should not be more planting or limited planting in these places.

Both speakers emphasised that the harmful effects of forestry began as soon as planting preparations started. Ploughing to improve drainage released silt into the rivers, which could kill the young fish and alter the vegetation growing there, Mr. Morrison said. If streams were canalised, deep pools in which the fish survived during drought

were lost. Fish populations in streams in forested areas had been found to be half that in those outside, he said.

Dr. Milner said that, as a rule of thumb, trees should be kept at least five metres from a small stream and three times the width away from a larger one. The Forestry Commission had prepared guidelines for these matters which it applied to its own planting and as a basis for approving grants to private ones. However, a number of conservation bodies were now working with it to produce a better version.

Ms. E. Twomey, of the Department of the Marine, said that a parallel project to prepare guidelines was going on in Ireland, involving State and private forestry interests, the central Fisheries Board and her department.

"We've been looking for guidelines since 1983," commented Micheál Kennedy, manager of the Western Regional Fisheries Board. The WRFB is taking legal action against the Forest Service as a result of pollution caused by the aerial fertilisation of trees in Connemara last summer.

*Irish Times,
15th September 1989.*

Irish Timber Council Brochure

A large gathering of businessmen, foresters, architects, engineers and prominent members of the timber trade, saw the Minister for Energy, Mr. Robert Molloy, TD, formally launch the Irish Timber Council's new corporate brochure on September 6. The Minister had been invited by the Irish Timber Council to launch this brochure which will be used as a marketing aid by the Council in promoting Irish timber.

The brochure highlights the sophistication of the processing sector of the industry in the production of quality sawn timber for construction. Also featured is the added value which can be gained from such residues as sawdust and woodchips in the manufacture of chipboard and medium density fibreboard respectively. Irish timber in the furniture industry, post and rail fencing and a diversity of other timber products are featured.

The use of Irish timber in projects such as the Killykeen Forest Park Development, the Hall of the Vicar Choral in Cashel and the Glulamined arches of Artane Sports Complex is highlighted.

John O'Halloran, President of the Irish Timber Council, emphasised that the new brochure was a first important step in a marketing programme for timber products. This ambitious programme will involve co-

operation and support from different sectors of the timber industry including the Irish Timber Council, Coillte Teoranta and the Irish Timber Trade Association.

He also emphasised the Irish Timber Council's active role in their participation in the development of European Standards and their commitment to the development of a marketing strategy for the 1990s. This is aimed at developing an architectural wood culture in Ireland, and an awareness internationally of the range of quality timber products available from the industry.

*Co-op Ireland,
September 1989.*



At the launch of the new corporate brochure of the Irish Timber Council (ITC) were (from left): Mr. Martin Lowery, CEO Coillte Teo., Mr. Kieran O'Connor, OPW, Mr. John O'Halloran, President of the ITC, Mr. Bill Foley, ITC, Mr. Bobby Molloy, TD, Minister for Energy, Mr. Pat Cooney, Chairman Coillte Teo., Mr. Paddy Glennon, Glennon Sawmills, Mr. Peter Murphy, Woodfab and Mr. William Decon, Decon Sawmills.

Swedish Wood Firm May Locate Here

The Swedish forestry products group Stora Kopparberg is actively considering locating a large wood pulp plant in Ireland. In an interview in the Swedish business daily "*Dagens Industri*" yesterday, the managing director of the group's pulp division said that a number of expansion options abroad were under review, but that there were many advantages in locating in Ireland. "Among other things, Ireland is in the European community, and the country has a climate suited to fast forest growth", said Mr. Per Knuts.

The first stage of the proposed project would involve an annual production of 100,000 tonnes

of fluff pulp and establishment costs would run to at least a billion Swedish kroner (£110 million). "We have been to Ireland to look around and have informed the authorities there of our purpose", Mr. Knuts said. "We are now working on a study which should be ready in the late autumn. It will show whether the project is feasible."

It is known that Stora has

had earlier plans for a 600,000 tonne plant in Portugal and for a massive expansion of their existing unit in Nova Scotia, Canada. According to the company, the market for pulp is growing rapidly and they are determined not to lose their market share, particularly in the fine paper area.

*Irish Times,
16th September 1989*

New Body To Promote Forestry Launched

Mr. Bobby Molloy, TD, Minister for Energy, last week launched a new industry body set up to provide a co-ordinated approach to forestry development in Ireland. The new body, which is virtually unique in Europe, brings together organisations involved with all stages in the wood chain, namely, nurseries, tree growers, saw millers and processors, importers, as well as the State Forestry Company, Coillte Teoranta.

The Irish Forestry Industry Chain (IFIC), which has been set up under the aegis of the Confederation of Irish Industry, has the following membership: Coillte Teoranta, Confederation of Irish Industry, Eolas, Irish Farmers Association (Nursery Organisation), Irish Timber Council, Irish Timber Growers Association, Irish Timber Trade Association.

The first Chairman of the Irish Forest Industry Chain is Mr. Brian Hussey, Managing Director of Woodland Investments

Limited, the Vice-Chairman is Mr. John O'Halloran, Manager of Woodfab Limited, and the Secretary is Dr. Aidan O'Boyle, Director of Industrial Policy, Confederation of Irish Industry.

The key objectives of the

Chain will be to devise and promote a strategy for the Irish Forest Industry Chain embracing immediately: The development of a national forestry policy; The encouragement of a greatly expanded planting programme; The promotion and development of Irish timber on the home and European markets; Obtaining increased support from the European Community for development of the wood chain; Finding an acceptable mechanism by which existing derelict land can be more readily mobilised for forestry development and representing the interests of the member organisations to the public, local and national government, as well as to the EC Community institutions.

*Anglo Celt,
28th September 1989.*



Pictured at the launch of the Irish Forest Industry Chain were (from left): Mr. John O'Halloran, Vice-Chairman, Irish Forest Industry Chain, Mr. Bobby Molloy, TD, Minister for Energy and Mr. Martin Lowery, Chief Executive, Coillte Teoranta.

Minister Given Assurance Over Scariff Dust Problem

Finsa Forest Products, Scariff, have given an "absolute assurance" that the dust problem created in the area by them will be finally cleared up within the next twelve weeks. Minister for Industry and Commerce, Mr. Des O'Malley, TD, announced that he was given such an assurance by the board of the East Clare firm when he opened a new energy plant there last Friday.

Mr. O'Malley said that there was a certain environmental problem in relation to the operation of the Finsa plant and as a result there had been difficulties and discomforts suffered by the people of the locality.

Local people had been patient but during discussions with

Finsa he was told that they were determined to clear the "dust problem".

Mr. O'Malley was in Scariff in the presence of the Spanish Ambassador, Dr. Jose A. Yturriaga, to officially launch a second major investment in the future of Finsa Products.

He opened there a £1.7m gas generator installed to cut drying costs at the revamped timber processing operation.

Mr. Liam McElligott, Managing Director, Finsa Products Ltd., stated that the completion of the commissioning programme later on would mark a significant move forward by Finsa in the creation of a cleaner environment. Finsa was very clear on its attitude to the environment in the recent past and would combine on the same road to improvement in the future.

*Clare Champion,
29th September 1989.*

Smurfit Go For Trees As Investment

Smurfit Ireland is to invest IR£10 million over the next five years in a major Irish forestry programme.

The scheme will provide employment for 50 people in the preparation and planting of 10,000 acres in Kerry, Clare, Tipperary and Limerick.

Managing Director of Smurfit Ireland, Patrick J. Wright, said his company was reacting to the changed circumstances arising from EC and Dublin Government incentives for private forestry.

He explained that although the £10m is Smurfit's first investment in Irish forestry, the group has extensive world-wide experience of forestry management in southern United States. The company is currently engaged

in a programme to develop 240,000 acres of eucalyptus at a cost of £42m in Columbia and Venezuela in South America.

*Irish News,
30th September 1989.*

Wood Ireland A Success

The Society of Foresters have to be very chuffed with themselves for the success of the Wood Ireland exhibition of Irish Wood Products and Design at the UCD Campus in Belfield. It was the first national exhibition of its kind, quite an eye-opener as to how far the Irish timber industry has progressed in the last two decades and what the leading companies are doing in several fields. The centre was busy on the two days from the Friday opening to the Saturday evening closing when, at four, it seemed someone rang a bell and they came in a tidal wave to

catch the exhibits on the various stands before closing time.

The Society's PRO, John McLoughlin of Greystones began to wonder if they hadn't made a mistake by not running on until Sunday. Michael Smith who now holds down Science and Technology was delighted to be back with timber men again: (he was Minister for Energy with responsibility for Forestry).

The Taoiseach paid what was going to be a flying visit on the second day and stayed to examine a number of the more impressive stands and even took a hand at one turning lathe to the cheers of the crowd. He confessed to being "totally impressed by the skill and stylishness of the exhibitors" and the "marvellous range of Irish woods" so well packaged and presented.

*Environment Ireland,
November-December 1989.*

Purchase Of Kinnitty Castle – Exciting Development

Kinnitty Castle and grounds totalling 62 acres has been purchased by the Shannon Development Company for £250,000.

When the Minister for Energy, Mr. Robert Molloy, TD, announced the purchase last week he felt that it would be utilised effectively to benefit the local community.

Some of the projects mooted by the Minister for the castle include, a holiday complex, an outdoor pursuit centre, an equestrian centre and riding school. There is also mention of

an international recording centre.

It is understood that Shannon Development will be seeking private sector investment. They are also confident of getting EC funding to promote the use of the building and the lands.

The castle, since 1951 has been in state ownership. Situated one mile from Kinnitty it was used as a National Forestry School from 1955 to 1984.

IRISH FOREST AWARD

The Forest Service of the Department of Agriculture in Northern Ireland has won a prestigious environmental award for woodland management.



At a presentation of the Irish Woodlands Award 1989, at the RDS in Dublin, were (from left): Mr. Peter Bottomley, the Northern Ireland Minister for Agriculture; Mr. Bill Wright, Chief Forest Officer in Northern Ireland; Mr. Martin Lowery, Chief Executive of Coillte Teoranta; and Mr. John Bruder of Allied Irish Investment Managers Ltd.

Knockmany Forest, Co. Tyrone has been judged the winning entry in the Royal Dublin Society's Irish Woodland Competition.

The awards were initiated by the Society in 1988 to encourage high standards of management in both private and public sector woodlands in Ireland. Knockmany Forest, the second oldest forest in Northern Ireland was acquired in 1911.

Coillte Teoranta was very highly commended for Ravensdale, Dundalk forest in Co. Louth and the Allied Irish Investment Managers Ltd were highly commended for woodland at Inagh, Co. Clare.

At a ceremony in Dublin, Mr. Bobby Molloy, Minister for Energy in the Republic of Ireland presented the award to the Department of Agriculture which was represented by Mr. Peter Bottomley MP, Parliamentary Under-Secretary of State for Agriculture and officials from the Northern Ireland Forest Service.

*Irish News,
4th November 1989.*

IFA Favour Local Farmers Benefiting From Forestry

The IFA have supported the development of forestry as an additional form of land use in the West of Ireland.

Marginal land adjoining farms stocked with cattle and sheep could be put to good use by

planting, earning yearly headage payment, plus a lump sum at harvesting.

However, the IFA have expressed concern at recent moves by financial institutions and large corporate investment companies which have launched forestry projects recently.

Chairman of IFA's Western Development Committee, Mr. Padraic Divilly of Kilkerrin, Tuam, said IFA's concerns are based on the fear that mass afforestation would result in large companies buying up tracks of marginal land for plantation at prices outside the reach of local farmers.

In the implementation of the

EC's Forestry Action Programme the Irish Government must weight the financial incentives available much more heavily in favour of farmers and the rural population generally rather than outside corporate investors.

"If this does not happen then there is a real possibility that almost the entire area of some countries could be turned into massive woodlands denuded of people." Mr. Divilly also says that there was a possibility that farmers would be able to get higher headage payments on the section of the farm that was planted for forestry.

The clear intention of EC

policies for the future of rural development is to maintain economically viable communities throughout the European countryside through the promotion of alternative enterprises, such as forestry. The Irish Government is duty bound to ensure that the EC Forestry Action Programme reflects the original intention, and is implemented on a planned basis so as to ensure that the social environmental and economic advantage accrue primarily to the rural population."

*Western People,
22nd November 1989.*

Bogland – For Farming or Forestry Asks ICMSA

The sale of cutaway bogs for forestry purposes was the subject of a heated ICMSA public meeting in Rochfordbridge. The meeting was addressed by the ICMSA President, Mr. Tom O'Dwyer and the Minister for Education and Fianna Fáil TD for Longford-Westmeath, Mrs. Mary O'Rourke.

Concern expressed by farmers living on the periphery of the local bogland in relation to the proposed sale of the bogs for forestry development, gave rise to the ICMSA meeting.

"The present incentives for forestry development are welcomed by the ICMSA. However, where cutaway bogland can be farmed it should not be laid down to forestry especially when it makes better farming than forestry land," stated Mr. Tom O'Dwyer at the Rochfordbridge meeting.

Mr. O'Dwyer added "Of course Ireland should increase the amount of land under forestry.

At present we have about 5% of our country under forest, by far the lowest percentage in the EC – yet we have the best tree growing climate. But in order to extend our forests we do not have to plant farmland or potential farmland.

"Ireland has 20% of its total area, or approximately 3 million acres of mountain and hill land ideal for forestry. Why then the rush to cover good potential farmland – either the low wet mineral soils or the cutaway bogland – with trees?

"I fully support forestry in the right place. However, I see the rush to plant farmland as a kind

of cop-out for the Government. If the land is planted then it is not available for general farming. This is just a postponement of the problem.

"As forestry is such a long-term project and its affects on the neighbouring community are long lasting, I suggest that afforestation should be subject to planning permission.

*Westmeath Independent,
24th November 1989.*

Christmas Trees Import Warning

A strong warning was sounded today about the importation of Christmas trees into the province.

Mr. Bill Wright, Chief Forest Officer, Department of Agriculture said: "It is illegal to import coniferous trees without a plant health certificate.

"Trees which arrive without the necessary documents are liable to be destroyed. Trees over 3 metres in height are prohibited and the only exceptions are those from the Irish Republic."

Mr. Wright added the restric-

tions were necessary to prevent introduction of the Great Spruce Bark Beetle which could cause considerable damage to forestry plantations.

*Belfast Telegraph,
24th November 1989.*

'BANK VOLE' ON THE RAMPAGE

Are the forestry plantations along the Cork-Kerry border threatened by attacks on young trees by the "bank vole"? The pest is a form of rodent rather resembling a rat. It was not known to be present in Ireland up to about twenty-five years ago when it was discovered in Kerry. The forestry authorities say that the species has since spread over the county boundaries of Kerry-Cork and Kerry-Limerick. The department has reported "severe local impact" on young trees "in a small number of plantations". There have not been, apparently, any reports of "widespread damage" but the department says that "control measures are being considered".

*Corkman,
15th December 1989.*

Christmas Trees Dearer

If you're thinking about getting a non-shed Christmas tree this year, then unless you are prepared to hunt around a bit, better think again. The popular non-shed Noble fir could set you back £20.

Prices this year include VAT for the first time, because Coillte Teo (the Irish Forestry Board) is now a limited company.

So what sort of prices should you expect to pay? If you buy direct from state forests, Noble fir will cost between £12 and £16. The other non-shed Lodgepole pine will cost between £6 and £9. And the Norway spruce (which sheds) between £5 and £8.

Retail prices are higher with Noble fir fetching between £15 and £20, and Lodgepole pine and Norway spruce £8-£10.

*Irish Press,
9th December 1989.*

The above selected articles have been abstracted and edited from a wide range of national and provincial newspapers. It is hoped that they will provide a view of events and opinions on forestry issues that occurred in Ireland in 1989.

This section will be continued in future issues.

Editor.

Obituary

DR. EILEEN McCracken 1920-1988

Eileen May McCracken was born in Lisburn, Co. Antrim on 16 February 1920, the only child of Colin and Bessie Webb who came originally from the Forest of Dean. She was educated at the Friends' School, Lisburn and at the Queen's University, Belfast where she took a joint honours B.Sc. in Botany and Geography and became a protégé of the distinguished Professor Estyn Evans. It was under his supervision that she completed a M.Sc. degree, a pioneer study on the history of forestry in Ulster. Later she expanded this to cover the history of forestry and the timber and related trades in the whole country, work which bore fruit in her book *The Irish Woods Since Tudor Times* (1971) and also in major contributions to four other books and some two dozen articles. Her Ph.D. thesis was not on forestry but on the growth of the white population in South Africa.

Her interest in South African history stemmed from a period of residence there in the late 1940s with her husband J. L. McCracken whom she married in 1944. That interest was later to be revived when she moved from forest history to garden history. Her first venture in this field was undertaken in an effort, which proved successful, to save the Turner Palm House in the Belfast Botanic Gardens from demolition. This was followed by work on the history of the gardens at Glasnevin and on botanic and other gardens in Ireland. The outcome of her work in this field was her co-operation with Dr. Charles Nelson to produce *The Brightest Jewel*,



a history of the National Botanic Gardens, Glasnevin, Dublin (1987). She was provided with a new challenge, the hitherto untouched study of garden history in South Africa, when she returned there in search of better health after her husband's retirement. In this, she was joined by her son Donal and together they produced *The Way to Kirstenbosch*, a history of South African botanic gardens from 1652 (1988), a work which appeared a month after her death. The day before she died she finished an article on William Harvey, an Irish botanist at the Cape.

Although a very gentle person Eileen McCracken felt strongly on a number of subjects and did not hesitate to express herself forceably. Her love of Ireland was all-pervasive; her dedication to intellectual integrity and

scholarly discipline was complete; she abhorred obsequiousness, discrimination, especially against women, sectarianism and violence in any form; her devotion to animals inspired a passionate interest in wild life and conservation. Outside of her own field of study, she had a very wide knowledge of English poetry. A flair for gracious hospitality, combined with great culinary skills, made her a notable hostess wherever she went.

Eileen McCracken died in Durban on 12 November 1988. Her ashes were taken back to Ireland and scattered in the National Botanic Gardens at Glasnevin where a tree, *Arbutus unedo*, has been planted as a memorial. In the Durban Botanic Gardens also a tree, *Gnetium gnemon*, has been planted to her memory.

Ar dheis lámh Dé go raibh a anam.

Michael McNamara.

Society News

WOOD IRELAND

The first national exhibition of wood products and design – WOOD IRELAND – was held on the 29th and 30th September 1989 at the Sports Complex, Belfield, University College, Dublin. The event was conceived, organised and run by the Society. The objective was to promote the use of Irish wood and wood products among the timber trade and the general public. Mr. Michael Smith T.D., Minister of State for Science and Technology officially opened the event

on the morning of the the 29th. Thirty-four exhibitors took part, representing all sectors of the wood using and crafts industries:

Suppliers

Coillte Teoranta
Northern Ireland Forest Service

Sawmills

Glennon Bros.
Richardsons
Woodfab



Photographed on the Irish Timber Council Stand at the Wood Ireland Exhibition were (from left): Eugene Hendrick, Chairman of Wood Ireland; Paul Joyce, Wicklow Woods; Michael Smith, TD, Minister for Energy; Bill Wright, President of the Society of Irish Foresters and William Decon, Decon Sawmills.



An Taoiseach, Charles Haughey, TD, (left) shares a joke with Cathy Carman, Eugene Hendrick and John McLoughlin on the stand of the Sculptors Society of Ireland at the Wood Ireland Exhibition.

Furniture Makers

Grants Quality Furniture
Hans Leptien
Larry Egar
Irish Oak Crafts
Finest Crafts
Wood-Mann
Lorette Brown
College of Marketing and Design
Thomand College

Processors

Meditate Corporation
Kinbark
Abwood
TDS Teo.
Wicklow Woods
Duffy's Garden Furniture
Kelly's Garden Sheds

Educational & Advisory

Eolas
Irish Timber Council
Forest Service, Dept. of Energy

Arts & Crafts

Peter Sweetman
Knut Klemmek
Irish Wood Turners Guild
Sculptors Society of Ireland
Paddy O'Neill boat builder

Wood preservation

Hicksons
Protim
Sadolins

Wood working machinery

Eoin McGinn
I.W. Woodward

Over 6,000 people attended the event during the two days, with a particularly large attendance on Saturday afternoon. This was also the occasion of a visit by An Taoiseach Mr. Charles Haughey T.D. The Society marked the visit by presenting a copy of The Forests of Ireland to An Taoiseach.

As well as the trade and other stands, a series of lectures was given each day on various aspects of wood identification and treatment. Videos on woodworking crafts and timber treatment and storage were shown throughout the show. The WOOD IRELAND committee wish to thank those who gave talks, those who acted as chairmen and David Shaw-Smith for access to a number of videos from the 'Hands' series. Outside the Sports Complex the replica viking war-

ship 'Dyflin' was an extremely popular exhibit. Moving the 70 feet long vessel from its berth in Dublin port to Belfield presented many problems, including the overhead cables of the DART railway line which had to be temporarily cut. WOOD IRELAND wish to thank Mr. Enda Connellan of the Dublin Port and Docks Board and the ESB for their help in setting-up the exhibit.

Media coverage of WOOD IRELAND was extensive including the main evening news bulletin on RTE. Publicity for the show was greatly facilitated by the high quality brochure put together by Donal Magner of WOOD IRELAND. This included a number of articles on the forestry and wood industries as well as a very useful directory of advertisers, exhibitors and sponsors. Dr. Jack Gardiner was responsible for the staging of the exhibition and indeed for the original WOOD IRELAND concept.

The WOOD IRELAND committee are now taking a well deserved break but plan to return with a bigger and better show in 1991. Committee: Eugene Hendrick (Chairman), Kevin Collins (Secretary), Jim Neilan (Treasurer), Gordon Knaggs, Donal Magner (Editor), John McLoughlin (P.R.O.), Dr. Jack Gardiner, John Gilliland, Tim O'Reagan and Brendan Fitzsimons.

Eugene Hendrick and John McLoughlin

DATES FOR YOUR DIARY 1990

2nd March

Field day at Castlederg and Barnesmore forests. Topics: Nursery and Harvesting operations.

5th April

Annual General Meeting. Evening UCD, Belfield, Dublin.

6th April

Annual Symposium at St. Patrick's College, Maynooth. Topic: Harvesting technology in the 1990s.

22nd April

Forest Walks on Earth Day. Held in conjunction with Coillte Teo. at selected forest centres around the country.

14th-18th May

Annual Study Tour based in Dumfries, Scotland. Topics: General forest operations.

September

Field Day - venue to be decided.

ANNUAL SYMPOSIUM 1989

The Society's annual symposium titled 'Forest Produce – Raw Material for Industry' was held on Friday 7th April 1989 at Carysfort College, Blackrock, Co. Dublin.

The symposium was opened by the Minister of State for Forestry, Mr. Liam Aylward, T.D., and six invited speakers presented papers:

Mr. Michael O'Brien,
Coillte Teo., Dublin.
– Future Wood Supply.

Mr. Martin Joyce,
Woodfab, Fermoy.
– Sawmilling present and future.

Mr. Con Little,
Medite of Europe, Clonmel.
– The pulpwood industry in Ireland.

Mr. William Dick,
du Quesne Ltd., Dublin.
– Home grown timber for joinery.

Dr. Richard McCarthy,
Coillte Teo., Bray.
– Forest residues – a resource for exploitation?

Mr. Jørgen Schønau,
Korinth College, Faarborg, Denmark.
– Foliage and Christmas tree production and use.



(From left) Michael O'Brien, Martin Joyce, Bill Wright and Con Little at the 1989 annual symposium.

STUDY TOUR TO BELGIUM 1989

DAY 1: TUESDAY 30th MAY

After a coach journey through southern England, punctuated by an overnight stop at Reading, we crossed from Dover to Ostend and stayed in the city of Bruges. Early on Tuesday morning we travelled eastwards through the flat countryside of Flanders to the coast at Den Haan. Baron Alain de Jambline, President of the Royal Belgian Forestry Society, introduced us to Ir. De Schuyter and Ir. Vitre from the Forestry Division of the Environmental Planning and Land Use Department of the Ministry of the Flemish Community. Ir. de Schuyter gave an outline of forestry in west Flanders. Forest cover in the region is very low accounting for just over 2% of the land area and is almost exclusively recreational and protective in use. Nationally forests account for 20% of the land area.

The woods at Den Haan were originally planted to arrest inland dune migration. The earliest plantings began in the 18th century but these have all disappeared and the present woods are mostly thirty to forty years old.

Before any planting begins the dunes are first stabilised using brushwood shelters and marram grass. The brushwood is placed in parallel rows about 1.5m high, 5-10m apart. When the sand is stabilised to some extent, shrubs such as sea buckthorn, willow and privet are planted. These bind the sand further and give protection from exposure and salt winds to the trees planted further inland.

The dunes at Den Haan are from 500-900m wide and the plantations cover an area of 152 ha. The plantations begin about 150m from the high water mark

and are mainly comprised of Corsican (*Pinus nigra calabrica*) and Austrian pine (*Pinus nigra austriaca*). Smaller stands of broadleaves such as oak, poplar, white poplar and maple also occur. Of the conifers Austrian pine is the most resistant to salt wind and exposure. However, its form is very poor and its productivity low, an average of 3-4 m³/ha/annum. Corsican pine is confined to the more sheltered inter-dune flats and reaches reasonable size with an average increment of 6-7m³/ha/annum. One stand located 700m inland, planted in 1926, carried a volume of 419 m³/ha on 600 stems. The policy in these older stands is to gradually open up the canopy and encourage the growth of broadleaved species and manage these under a coppice with standards silviculture. This ensures the site is always covered by vegetation. Coppice regrowth is cut on a 10-15 year cycle. The favoured species are maple, white poplar and oak (*Quercus robur*).

The introduced black cherry (*Prunus serotina*) regenerates prolifically and is spreading in all plantations. It is however, regarded as a weed species and is removed during cleaning and thinning.

Attempts are also being made to establish plantations of broadleaves. These however have had mixed results. The high exposure and low moisture holding capacity of the sandy soils makes establishment difficult. Measures to counteract this include using moisture retaining products in the planting pit ('Hygromul' for example) and tree shelters. The latter have been used for two planting seasons but have not given very promising results.

While the protective function of the plantations is still important the woods are a very important amenity in an area of low forest cover. Pathways have been made through the woods and much of the time the staff is spent maintaining these. The high level of public use of the dunes is preventing natural regeneration from developing fully.

From Den Haan we moved to a nearby inn where we had a very pleasant lunch with our hosts. This included a rendition of an Irish air on the pipes by one of the Belgian foresters.

After lunch we moved inland, across the flat polders, south-westwards to the state plantations at Koekelare and the famous stands of Corsican pine (*Pinus nigra* "Koekelare"). The Parceel Vrouwen-vijverl – Bestaad H1 was planted in 1882 with a mixture of pine and European larch. The stand development details were given as follows:



Lunchtime entertainment by a Belgian forester.
(Photo: D. Keane)

The stand has a top height over 30m and a mean tree volume of 4.5 m³. The intention is to retain the stand for as long as possible. Thinnings make in the region of 800 Belgian francs/m³ (standing).

Table 1: Stand Development History of Koekelare Corsican Pine

Age p1882	Main Crop				Thinnings				Average annual volume increment m ³ /ha/year (Pine)
	/ha		Larch /ha		/ha		Larch /ha		
	N	m ³ Planting	N	m ³	N	m ³	N	m ³	
18	538	—	254	—	—	—	—	—	—
27	—	—	—	—	174	13	117	5	—
8	364	—	137	—	174	13	117	5	—
51	219	374	21	15	319	100	233	40	9.3
1933-40	—	—	—	—	337	132	239	45	—
65	196	445	—	—	338	133	246	50	8.9
70	179	478	3	5	359	157	251	55	9.1
74	179	505	3	5	359	157	261	55	8.9
83	163	530	3	5	375	184	261	55	8.6
87	146	—	3	5	392	220	261	55	—
91	146	598	0	0	392	220	254	60	9.0
98	146	607	0	0	398	234	254	60	8.6
107	135	609	0	0	403	255	254	60	8.1

Table 1 (contd.) Periodic increment

Period: 1973-79		Period: 1980-89	
Volume 1973 =	598 m ³ /ha	Volume 1980 =	607 m ³ /ha
Volume 1980 =	607 m ³ /ha	Volume 1989 =	609 m ³ /ha
Thinning Volume =	14 m ³ /ha	Thinning Volume =	21 m ³ /ha
Total	621 m ³ /ha	Total	630 m ³ /ha
Increment 23 m ³ /ha over 6 years = 4 m ³ /ha/annum		Increment 23 m ³ /ha over 8 years = 3 m ³ /ha/annum	

After visiting the main stand at Koekelare we moved to an adjoining plantation of Corsican pine, 44 years old. Over the past four years the stand has become badly defoliated. Similar damage has occurred in other Corsican pine stands in West Flanders. The main cause is thought to be ammonia produced from pig farms adjacent to the plantations. The region has also experienced three severe winters in a row and this is believed to have exacerbated the problem. The extent of the damage in the area is shown below:

From pig farming and forests we moved up the road to a small 3.5 ha clearfell dating from 1980. Most of the area has been colonised by Corsican pine seedlings. The remainder has been planted with oak and birch seedlings which have been allowed to develop in wet patches. Herbicides were used but there was a bad public reaction and they have not been used subsequently.

Before leaving Koekelare the President, Bill Wright paid thanks to the staff of the west Flanders Forest Service. Each of our hosts was presented with

Table 2: State of Health of Forests in West Flanders.

Region	Degree of damage	Distance to a source of emission (piggery)	Estimated total N production in region (kg/ha agricultural land/yr)
Zedelgem-Vloetenveld	●	200m	485
Koekelare-Koekelarden	●	200, 400, 600m	378
Beernem-Bulskampveld	●	500m	444
Tillegem-Tillegembos	●	500m	485
Brugge-St. Andries	●	500m	276
St. Andries-Karvijn	●	500m	276
Ichtegem-Wijnendalebos	●	1km	484
Sijsele-St. Jansbossen	●	1km	270
Sijsele-Rijkevelde	* (trace)	2 to 3km	270
Oostkamp-Nieuwenhove bos	●	3km	573
Zonnebeke-Staatbos	*	more than 3km	374
Ursel-Drongengoed	*	more than 3km	434
Eeklo-Het Leen	*	more than 3km	470



Members of the West-Flanders Forest Service at Koekelare.

(Photo: F. Gibbons)

a polished section of bog yew (*Taxus baccata*) from Clonsast bog. From there it was back to Bruges where Baron de Jamblin took the group on a tour of the very attractive old city centre of Bruges.

Eugene Hendrick

DAY 2: WEDNESDAY 31ST MAY

Morning

Day two of our Belgian Study Tour commenced as our party departed Novotel Brugge in bright sunshine and joined the main motorway from Ostend to Brussels. We were heading south towards our first stop, the "Geographic Arboretum of Tervuren". On route we passed the city of Ghent, and former capital of the Counts of Flanders. Soon we were on the outskirts of Brussels and passing through part of the Forêt de Soignes, we arrived at our morning stop.

Here the Baron de Jamblin introduced us to Mr. Michael Terlinden, Secretary of the Royal Belgian Forestry Society, our hosts in Belgium. Baron de Jamblin also introduced us to Mr. Stan van Dievoet, Steward of the arboretum and our leader for the morning. Mr. van Dievoet welcomed the Society to Belgium and introduced us to the background and role of the arboretum.

The Capuchin Wood, from part of which the arboretum was created, obtained its name from a monastery that existed here from 1626 to 1796. It has an area of 310 hectares and is situated at the perimeter of the Forêt de Soignes. Between 1822 and 1843 the forest was almost completely cleared and most of the land was cultivated. It was replanted by King Leopold II from 1875 onwards, during the period of the implementation of the policy of the "Green Spaces", with

a mixture of broadleaved species, mainly beech, oak, elm and ash.

In 1903 the King bequeathed these properties to the Belgian people with a view "to conserve, close to the large towns, free spaces with natural decorations in an atmosphere which is aesthetic and hygienic".

It is to Prof. Charles Bommer (1866-1938), conservatore of the State Botanic Garden and holder of the Chair of Geography and Plant Palaeontology at the University of Brussels, that the idea of establishing an arboretum must be credited. In contrast to the classical arrangements, in which the species are ordered in systematic taxonomic fashion of genera and species, the Geographic Arboretum of Tervuren was created in a style to represent the forest associations most typical of the temperate zone of the Northern Hemisphere.

Extending to around a 100 ha in area, the arboretum has two sections: the old and the new continent covering 65 and 35 ha respectively. Each of the sections is subdivided into 20 groups representing many natural associations and characterised by one or more species properly identified. In total there are 460 woody species in the arboretum of which 155 are gymnosperms and 305 are angiosperms.

The arboretum is located 12 km south-east of Brussels, at an average altitude of 100 metres (80-115m). It enjoys a maritime climate which is temperate and favourable for tree growth. The average annual temperature is 9.4°C. The average rainfall per annum is 780 mm. Late frosts are frequent and damage occurs in the conifers with early growth.

Mr. van Dievot then led our party on

a conducted tour of the arboretum. We entered by the principal entrance from the crossroad of St. John and our tour commenced in the section devoted to the New World and particularly by the west coast of North America. This is the homeland of Douglas fir, *Tsuga heterophylla*, many spruces and sequoias and it was here that our party felt most at home.

Another group represents central coastal Alaska and was planted between 1965-1968. As well as Sitka spruce, this forest type also consists of western hemlock (*Tsuga heterophylla*), red alder (*Alnus rubra*) and western balsam poplar (*Populus trichocarpa*).

Moving south into the British Columbia group we found Sitka spruce in mixture with western hemlock, Nootka cypress (*Chamaecyparis nootkatensis*) and western balsam poplar.

From here we followed the coast southwards and reached Vancouver Island where in association with the previous species we found Douglas fir (*Pseudotsuga menziesii*), western hemlock, grand fir (*Abies grandis*) as well as broadleaved species like red alder with a shrub layer of vine maple (*Acer circenatum*).

Continuing our journey we left the coast and approached the Cascade mountains. At the lower elevations, up to 700m, the same composition of species occurs. The midslope forest type is mainly composed of grand fir with Douglas fir and western hemlock. At the highest levels grand fir is replaced by Noble fir (*Abies procera*). Finally mountain hemlock (*Tsuga mertensiana*), Engelmann spruce (*Picea engelmannii*) and lodgepole pine (*Pinus contorta* var *latifolia*) all grow almost to the

timberline.

Our travels next took us to the state of Washington and as we go around the Puget Sound we arrive at the Olympic Peninsula where Sitka spruce is the dominant species especially in the "Olympic rain forest".

In the coastal chain of Oregon beside the classical mixtures of Douglas fir exists a type, limited to the coastal forests, characterised by Lawson cypress (*Chamaecyparis lawsoniana*) in mixture with western hemlock.

Further south in the northern Californian coastal chain occur the giants of the plant world, the coast redwood (*Sequoia sempervirens*). While very sensitive to the Belgian climate, three specimens of this species have survived, protected by the surrounding Sitka and western hemlock. In the same region but at much higher elevation, mixed stands of Colorado white fir (*Abies concolor*), western yellow pine (*Pinus ponderosa*), incense cedar (*Calocedrus decurrens*) with Douglas fir and western red cedar (*Thuja plicata*) occur. Also in this group red fir (*Abies magnifica*), Brewer spruce (*Picea brewerana*) and sugar pine (*Pinus lambertiana*) make their appearance.

Towards the interior of the American continent the Sierra Nevada mountain range is home to a number of species of which the most spectacular is Wellingtonia (*Sequoiadendron giganteum*). Others in this group include white fir, red fir, western yellow pine, Jeffrey's pine (*Pinus jeffreyi*), lodgepole pine and incense cedar. The Wellingtonia are the tallest trees in the arboretum at 33 m with a circumference of 4.5 m.

The final part of western North America represented was Montana with a dis-

tinct proportion of more elevated forest of western white pine (*Pinus monticola*) at elevations of 650 to 1500m. This forest formation has been given the name of "The Western pine region".

We concluded our trip by contrasting the west coast of America and its predominance of coniferous forests with the east, where broadleaved species tend to dominate.

A lively discussion concluded our visit to Tervuren and many of us vowed that we would return again at some future time to this wonderful place. Before we departed, our President, Bill Wright thanked Mr. van Dievoet for a most interesting and informative guided tour and presented him with a disc of bog yew on behalf of the Society. We then boarded our bus and headed off for lunch at a local hostelry.

Afternoon

Our afternoon stop was at the Forest Research Station at Groenendaal-Hoeilaart just outside Brussels. Here Baron de Jamblin introduced us to Dr. Nanson, Director of Forest Genetics Research, and our leader for the afternoon.

Dr. Nanson welcomed the Society to Groenendaal and gave us a brief outline of forestry in Belgium. Forests cover 20% or 600,000 ha of Belgium with approximately 50% owned by State and 50% owned by the private sector. About 50% is broadleaved woodland while the remainder is coniferous forest. Average production is about 5 m³/ha per annum at the moment but it is hoped to double this to 10 m³/ha per annum through continued research and development. The overall increase expected through genetic improvement is 60% with a breakdown as follows: 20% by improved prov-

enance choice, another 20% through the use of quality seed from seed orchards and a further 20% gain is expected by using selected improved individuals in clonal forestry. The quality of the wood produced will also be improved and will command much higher prices.

Dr. Nanson then gave us an outline on the research work undertaken at Groenendaal. The earliest research work, in forest genetics in Belgium, began about 1900 and started with provenance experiments in Scots pine (*Pinus sylvestris*) which were established by the station. Many European foresters also became aware of the importance of racial variation in Scots pine at this time when many of their plantations failed while others grew successfully. As a consequence foresters paid greater attention to the use of seed of the correct provenance. About 1935 the "Comptoir et Secherie des Graines de L'Etat" was established and based at the Research Station at Groenendaal. Its purpose was to sell seed of best genetic quality (correct provenance) for afforestation in Belgium.

From 1950 onwards a programme of selected "plus" seed stands and plus-trees was initiated. Several provenance and progeny experiments mainly with Scots pine, Corsican pine (*Pinus nigra*), Douglas fir, Norway spruce (*Picea abies*), with pedunculate (*Quercus robur*) and sessile oak (*Quercus petraea*) and beech (*Fagus sylvatica*) were established. At the same time, a programme for the establishment of seed orchards in central Belgium, in conjunction with the Forest Service, also commenced.

During the period 1960-1970 the programme for establishing "seed orchards"

was developed and the first orchards were put in place. In 1966 a study group for the improvement of forest species was created to identify the best and most suitable provenances for Belgium. As a result of this study, the best provenances of Norway spruce, Douglas fir, Corsican pine and larch were identified. Work on broadleaved species, especially beech, oak and cherry (*Prunus avium*) was also started.

In continuation of the programme of improvement for all species the plan of action has the following chronological sequence.

1. Study of provenance:

Provenance trials permit the long term comparison of the indigenous and introduced exotic populations of a species and the selection of the most suitable for Belgian forestry. These populations also provide gene-pools for further breeding work.

2. Selection of seed stands:

The selection of seed populations, that is the best stands in the country from the phenotypic viewpoint and their registration in the National Catalogue of Seed Stands. To date over 1000 ha of seed stands are officially recognised for all the principal species.

3. Selection of individual

Plus Trees:

This programme ensures the selection of the best individuals based on phenotypic characteristics such as growth, vigour, straightness and resistance to insect and fungal attack.

4. Establishment of seed orchards:

The best "plus trees" selected are propagated through grafting or cuttings and planted in orchards. The continuous observation and comparison of these

progeny allows the determination of the genetically superior trees and the best individuals. This permits the establishment of elite seed orchards.

5. Development of multiclonal varieties:

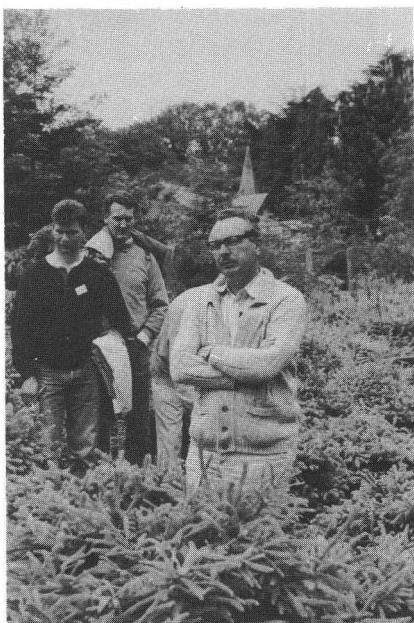
From the beginning, the best plants from the most suitable provenances and the better progeny from seed orchards were selected. Today young clones are selected in the nursery and propagated vegetatively by cuttings with a view to creating multiclonal varieties of high genetic quality.

Species improvement programme:

This programme's main objective is to increase the economic returns from the principal forest tree species. For conifers, the main emphasis is on spruce, Douglas fir and hybrid larch. These species represent over 75% of the annual reforestation programme for Belgium. Research on broadleaved species is mainly concentrated on the oaks including American white oak (*Quercus alba*), cherry and ash. Other work includes the development of a multi-clonal variety of western red cedar (*Thuja plicata*) with resistance to acid rain.

Tour of the station:

Dr. Nanson led the party on a guided tour of the station. Our first stop was in a grafting house where Douglas fir had been grafted by the side veneer method with 50% success. A major problem with Douglas fir grafts is that of plagiotrophic growth which remains for a number of years in the field. The next stop was at a collection of the best clones of Norway spruce now hedged to produce material for cuttings. These clones were of selected material from the Ardennes



Dr. Alphonse Nanson (foreground) with group members in the Norway spruce clonal garden at Groenendaal.

(Photo: D. Keane)

which has proven to be the best and most suitable provenance location for use in Belgium. Provenance tests have demonstrated that sources from Germany and Poland are much inferior in comparison with native sources. Already 200 of the best Norway spruce clones are available commercially in Belgium.

The cutting programme with hybrid larch (*Larix x eurolepis*) is well advanced. Hybrid larch cuttings are taken fresh from the selected hedged stock and the cut ends are dipped in a rooting powder. These cuttings are then inserted in raised beds in the open nursery and are rooted by September but will remain

undisturbed until the following spring. It is estimated that the cost of plants produced by cuttings is double the cost of plants produced by the conventional system.

From here we moved into the seed orchard area. The first, a Scots pine orchard, established in the early sixties, began to produce cones after five years and was in commercial production after ten years. Collection of cones is usually in January after the first heavy frost and average production is 5/10 kilograms per hectare. Other orchards established here are Corsican pine of Koekelare provenance, as well as larch and Douglas fir.

Our final stop for the day was a tour through the arboretum attached to the research station at Groenendaal with Dr. Nanson as leader. The arboretum was established around 1900 and many of the species have reached the end of their natural life, for example wild cherry. The arboretum is 13.5 ha in extent and has a total of 480 taxa.

Time as ever soon caught up with us and our visit had come to an end. The President, Bill Wright, thanked Dr. Nanson on behalf of the Society. Having said our final goodbye, we were on the road once again heading south towards the Ardennes and our overnight stop at Namur.

John Fennessy

DAY 3: THURSDAY 1st JUNE

On Thursday morning, June 1st, the study tour continued as we travelled to the south-east towards the Ardennes region; the heartland of Belgian forestry. On route from Namur to Vielsalm we saw some spectacular forest sites side by side with agriculture. Some of these

sites included large blocks of afforestation, some area of reforestation and some large Christmas tree farms. The journey had taken us from the sparsely afforested region of the north into the densely afforested region of the south. In this region of Belgium 20% of the total land area is under forests. On arrival in Vielsalm we were met by Dr. P. Gathy and travelled a short distance to the great private forest, the forest of Hodinfosse where we were met by Mr. J. P. Van Zuylen, the present owner and his son-in-law, Mr. A. Thill.

The Forest of Hodinfosse.

The forest is situated in the High Ardennes at altitudes between 400m and 565m in the parishes of Vielsalm, Grand Haileux and Trois-Ponts. Mr. Jacques Orban de Xivy, the great-grandfather of the present owner was the originator of this forest, with the acquisition of 500 ha of scrub in 1852.

The development of the forest occurred in three main stages; the first stage from 1852 to 1900 with the transformation of the scrub to plantations of *Pinus sylvestris*, the second stage from 1900 to 1955 with the introduction of Norway spruce and beech and the third stage since 1955 with the introduction of Douglas Fir and Japanese larch.

The forest of Hodinfosse now covers more than 800 ha comprising 85% conifers (Norway spruce, Douglas fir, Japanese larch and Sitka spruce on the summits) and 15% broadleaves (oak and beech). The soil is mainly acid brown earth, stony and about 80 cm deep. Annual rainfall is 1500 mm and the average temperature is 7°C.

As we travelled through the forest we learned of the objectives of Mr. Van

Zuylen and his foresters;

(1) To produce, in the nursery of the estate, forest plants of which the seeds and distinctive features have been recommended by the research station of Groenendaal.

(2) To give preference to plantations of Norway spruce rather than to natural regeneration, to tolerate the natural regeneration of Douglas fir and to do research on Sitka spruce.

(3) To replace Norway spruce and silver fir with Douglas fir, Japanese larch, Noble fir and Sitka spruce.

(4) To maintain 15% broadleaves (oak and beech) and 85% conifers.

(5) To attain a normal distribution of age classes.

(6) To reduce rotation of Norway spruce from 70/75 to 60/65 years.

(7) To progressively increase the annual cut to 10,000/11,000m³ by the years 2020/2030 from the present 6000/7000m³.

(8) To practise a policy of thinning of 3 to 4 ha/annum in preference to cutting with regeneration.

(9) To achieve a road density of 4/5 km/100 ha.

(10) To prune 400/500 stems/ha Douglas fir and larch.

(11) To ensure an equilibrium between flora and fauna. At present there are twenty-five deer and one hundred roe deer per thousand hectares.

(12) To hand down the property of the forest from the present owner.

Our first stop in the forest was in a stand of Douglas fir and Norway spruce, planted 1917.

Measurements taken in May 1985:

Number of trees: 180/ha of which 110 were Douglas and 70 Norway spruce.

Dominant height: 40.8m for Douglas, 33m for Norway spruce.

Basal area: 43.3m²/ha of which 34.5m³ was Douglas and 8.8m² was Norway spruce.

Average circumference: 198cm for Douglas, 126cm for Norway spruce.

Standing volume: 684m³/ha of which 523m³ was Douglas and 125m³ was Norway spruce.

Mean tree volume: 3.6 m³, 4.8m³ for Douglas and 1.8m³ for Norway spruce.

Our second stop was at a Douglas fir stand planted 1950.

Spacing: 1.8 x 1.8m

Measurements taken in 1987:

Number of trees: 460/ha

Basal area: 32.5m²/ha

Average circumference: 74cm

Standing volume: 347m³/ha.

Mean tree volume: 0.754m³.

Our third stop took us to a stand of Douglas fir planted in 1932.

This plantation was laid down according to the Anderson method.

Measurements taken in 1987:

Number of trees: 320/ha

Top height: 33.5m

Average circumference: 131 cm

Standing volume: 552m³/ha

Mean tree volume: 1.7m³.

Our fourth and final stop was at a plantation of Douglas fir planted in 1959:

Spacing: 1.5 x 1.5m with a mixture of Norway spruce.

Measurements taken in 1987:

Number of trees: 960/ha of which 900 were Douglas and 60 were Norway spruce.

Top height: 24.8m.

Basal area: 30.4m²/ha of which 29.2m²

was Douglas and 1.2m² was Norway spruce.

Average circumference: 64 cm for Douglas and 51 cm for Norway spruce.

Standing volume: 271m³/ha of which 266m³ was Douglas and 11m³ was Norway spruce.

Average volume tree: .289m³, .296m³ Douglas and .178m³ Norway spruce.

These figures provide us with an awareness of the silviculture applied by Mr. Van Zuylen to Douglas fir. It is deliberate policy to remove weaker trees because he wanted to get trees with choice branches and form, which could be cut down and which will give the least number of knots, thus producing woods of the first quality category.

In the forest of Hodinfosse insects and diseases are not a problem. There is no treatment used for the prevention of *Fomes* as they do not consider it a serious problem. Fires resulted in the loss of 100 ha of pine in 1986.

The commercial aspects of the forest are looked after by "Forestar", a limited company founded by forest owners. Its objective as a company consists of the exploitation and sale of wood belonging to its shareholders. The company looks after the interests of workers, deals with the users of the timber (sawmills, papermills etc.) and tries to obtain the best price possible for the timber and also establishes the needs of the consumer.

The contract between the owner of the wood and Forestar is as follows:

The forest owner, who may or may not be a shareholder of Forestar, decides for himself the management situation and volume of his felling. He proceeds through "hammering" that is establishing a catalogue indicating the number of

trees per category and by species. The contract of purchase is signed between the supplier and buyers. The exploitation and commercialization is made in the best interests of the suppliers. The payments are effected on the basis of five slices (samples) to provide a provisional estimate. The wood supplier can take account of the cost of exploitation and the sale price of the harvested products. The forest owner undertakes to follow the rules of the company, which are based on respect for the rights of the individual and on mutual trust.

All in all we had an enjoyable and informative morning in the private forest of Hodinfosse. Mr. Van Zuylen and Mr. Thill had shared their knowledge and long experience in silviculture of Douglas fir and spruce. An interesting point not already mentioned, was the volume increment of Douglas fir over 40 years:

40 years – 1m³
50 years – 2m³
60 years – 3m³
70 years – 4m³
80 years – 6m³

Following lunch in Vielsalm we travelled to a nearby private sawmill. At the sawmill we met Mr. de Hepecee, sawmill manager. The sawmill was set up originally by a group of forest owners to sell small softwood. It has recently benefited from a capital investment of some 300 million Belgian francs, and is now one of the most modern sawmills in Europe. It has been in production since early 1989 and while there seemed to be some slight teething problems along the line and some areas where improvement could be effected, when in full production it will be capable of sawing up to 800



Study tour group at sawmill near Vielsalm in the Ardennes.

(Photo: D. Keane)

m³ per day. The new mill saws both large and small sawlog.

One of the most unusual features to begin with was that there was no stock-heap in the yard. Twenty trucks of timber enter the mill daily, each truck carrying 40m³. Best results are achieved by sawing the fresh wood, also best prices were attained for fresh saw-dust and chips. The logs are loaded from the lorries into the racks which moved them onto a conveyor where they travel along through the debarking machine. From there they travel through a computer device for detecting metal in the wood (from the war years). Any logs that contain metal are stamped and discarded, the detector marking the area on the logs where the metal is situated. The logs then pass through a computer which give a graphic portrayal of the tree. The dimensions of the tree are then read by a sawing programme and

the log is sawn into planks and is further broken down to its various sizes as it travels through the mill. As the logs pass through the computer the volume of wood is measured and the workers are paid accordingly. All workers are paid similarly thus ensuring maximum production. One man operates each of the two main computerised saws and there are a number of other men situated at various points along the line. Fifty men in total are employed at the mill. The logs, having been broken down into final sizes are then cross-cut and go through an automatic sorting system. This system is a new installation and is certainly very labour saving. As each board has passed over its particular size category, a device lowers it into the appropriate rack.

Kiln unit

The sawmill has the most up to date

computerised drying kiln. The kiln was set up by three large sawmills in the east of the country. It was constructed in 1984 and started working in 1987. There was a total of 40 million Belgian francs invested in the unit. It consists of three cells, 1 x 80m³, 2 x 40m³, and is of the multi-combustible type. It is run on sawdust, bark and leftover pieces of wood. The feeding of the oven is automatic. The hot air circulates in the drying cells due to the action of ventilators. The current of air goes in one direction at a low point and also enters at the opposite direction at a low point, causing evaporation of water in the sawn wood. The drying time varies from three to eight days, depending on the size of the planks, the amount of humidity in a batch as well as the general humidity levels. The timber is dried to 12% moisture content for joinery and 18% for structural timber. Drying is controlled by computer. For each of the cells, five probes are placed in the wood, which relay to the computer temperature and moisture levels. The drying technique is an art – dry too quickly and the wood will split, dry too slowly and operation costs increase. At present the kiln is capable of drying 12,000 m³ per year and this could be doubled by adding additional drying cells without necessarily changing the oven. The kiln is operated by one man and has a specialist electronics technician and a mechanic for three days a week.

The sawmill has a recovery rate of 60% underbark. All the timber is utilized, the waste (sawdust, bark and sweepings) is used to fuel the kiln as described. Wood is also sawn into very small sizes, laths etc. Top prices are paid for the chips which are used in the

production of high quality paper. The softwoods sawn have numerous uses, wooden frames for housing, rafters, furniture, garden furniture, shutters etc. Market outlets for the timber include France, England, Holland and Germany. A very good market is available in Germany due to its close proximity (20 Km). Douglas fir commands high prices, as it is used in veneer quality wood.

Our visit to the sawmill was very interesting and thoroughly enjoyable. It is an extremely impressive operation with the most modern technology and machinery employed. Earlier in the day we had seen some fine stands of timber – Douglas fir, Norway spruce and larch – trees with good form and volume and later that afternoon in the sawmill we watched the logs being transformed from round wood to sawn wood, through one of the most modern sawmilling processes in Europe.

Frank Gibbons

DAY 4: FRIDAY 2ND JUNE

On the fourth and final day of the study tour we visited part of the south-west corner of Belgium, near to the border with France.

Leaving our hotel at Namur in the morning, we travelled south, gradually rising up into the scenic Ardennes region. The Ardennes rise to about 600 metres above sea level and are cut from east to west by a series of rivers. As a result all of the roads going north-west are very undulating. Clay soils predominate and these are difficult to work, being dry in summer and wet during the winter months. The underlying bed rock, schist, is of very poor structure.

Some 70 kilometers from Namur we reached the public forest at St. Hubert. On our arrival at the meeting point, Baron de Jamblin, who had continued to travel with us, introduced the group to the local forester Mr. Charue. Mr. Charue welcomed us and went on to introduce the forest with the aid of detailed maps. He manages some 6,000 ha of land, of which 41% is broadleaved forest (mainly beech), 47% Norway spruce forest and the remainder nature reserve.

The elevation is about 580 metres and average temperatures range from 0°C in January to 13°C in July. Rainfall averages about 1000 mm per year. Snow lies on the ground from December to April.

A certain amount of hunting for roe deer and boar takes place throughout the forest. Animal numbers, especially deer, have to be controlled if successful regeneration of beech is to take place. Generally, however, the game is poor as the vegetation is poor. It is this vegetation which classifies the beech forest growing above it. Birch grows at high levels on peat, and a small amount of oak occurs in pockets of good soil.

During the morning we were concerned mainly with beech and Norway spruce silviculture. Starting with beech, and close by the meeting point we saw natural regeneration. This, however, was very patchy due to grazing from deer. The crop was about 200 years of age. Small openings had been made in the canopy to encourage regeneration.

A short walk through the beech led us to an unplanted area which had been cleared of a crop of Norway spruce. Some of this still remains and is very poor. The intention is not to replant

again as establishment costs would be too high. Some of the tour party suggested Sitka spruce as an alternative species and mounding as a method of cultivation. Ground conditions were quite wet. The area will be left bare and incorporated with the birch woodland close-by as a nature reserve. This was indicated by a sign with a drawing of the wild flower *Trientalis* which is the symbol of Belgium nature reserves. Where we stood it was very common among the flora.

Bark beetle populations fluctuate from year to year. Two successive mild winters and the effects of natural predators and fungi have reduced their numbers. Even so, attacks have occurred on some of the Norway spruce. They will attack trees which are stressed, eating into the bark, and encouraging a fungus to develop which eventually causes the tree to die. Eggs are laid in May in the bark of the trees. A pheromone trap was placed to trap the beetles. The chemical is similar to that given off by beetles when they attack trees and attracts other beetles. In one year a trap can catch about 10,000 beetles.

Unlike beech, natural regeneration of Norway spruce is not encouraged for a number of reasons. Firstly, the identity of the seed is unknown. Secondly, it is expensive to thin and finally roots of naturally regenerated trees don't go as deep as planted ones.

Back on the bus, we drove a short distance to an area of Norway spruce planted in 1876. In 1962 this crop went through a planned transformation. The idea was to develop a stand of different ages and species. It wasn't a success. Young trees have been cut back by deer. At present, management is diffi-

cult owing to the variety of species. As well as cutting the beech, deer remove the bark of the spruce. In order to keep them from damaging final crop trees the bark is scribed in several places. The resin seemingly keeps the deer away.

The final stop of the morning was in a natural stand of beech which had been thinned recently. Thirty-five trees/ha were removed. The average tree was 6.35 m³. Thinning is carried out every twelve years or so to coincide with a good seed year. Commercial lengths are used within Belgium to make furniture and staircases. The tops are sold locally for firewood. Natural regeneration is a cheap way to establish a beech plantation, the only cost being the thinning out. Protection from grazing animals is essential, either by hunting or fencing.

We had a very pleasant lunch stop at Forneau St. Michel. Here in the lovely

sunshine some of the party explored the museum, while others amused themselves in the childrens' play area! The museum buildings were collected from different parts of Belgium and re-erected. They represent the various styles to be found around Belgium.

After lunch, the President, Bill Wright, thanked Mr. Charue on behalf of the Society for a most interesting morning.

In the afternoon we visited the provincial property of Mirwart and were welcomed by head forester Mr. Crispiels.

This provincial estate was bought by the State in 1950, and covers 13,000 ha. Twelve thousand ha is forest, the remainder made up of amenity and fishing areas. Approximately half the forest is coniferous and half broadleaved. The management plan is to make a demonstration forest. A continuous



The final stop at Mirwart among the tallest Douglas fir in Belgium.



*Presentation of The Forests of Ireland to Baron Alain de Jamblin
by the President, Bill Wright.*

(Photo: D. Keane)

inventory is carried out and the forest is divided into twelve compartments, each with a separate management plan.

We first saw a pure stand of beech of mixed age. The standing volume was $240 \text{ m}^3/\text{ha}$. Natural regeneration is very prolific. Thinning of regenerated trees is carried out manually leaving about one tree/ m^2 .

Moving to the second stop brought us into a mixed forest of oak, beech and Norway spruce. Mr. Crispiels wants to keep this mixture. The spruce has a very good increment growing in mixture with the beech and oak. Back in 1900 the former owners made clearings in the beech and planted Norway spruce. The seed was of good provenance and very suited to the locality. These plantings were very successful. By the 1950's the Norway spruce has reached the same height as

the beech and both were treated the same. Presently, the Norway is being cut in patches. Regeneration of these areas is controlled to keep the mixture of beech, oak and Norway spruce. The standing volume is beech $55 \text{ m}^3/\text{ha}$, oak $66 \text{ m}^3/\text{ha}$ and Norway spruce $136 \text{ m}^3/\text{ha}$. Ground vegetation is ideal for regeneration with *Oxallis* and raspberry prominent.

Strict control of game in the establishment stage results in a successful forest. Later on game can be encouraged.

The final stop of the afternoon and that of the tour was to see a particularly fine stand of Douglas fir planted in 1901. In the early life of these trees, fire and game put a lot of pressure on its development. It is only since 1950 that the crop really came on. And how well it did develop. Presently, the crop is putting

on 20 m³/ha/annum. The dominant trees are 50 m tall and are among the tallest trees in Belgium. During 1985, a thinning was carried out where the average tree has a volume of 4.8 m³ and a height of 42 m. The remaining trees average 6 m³ (some individuals are 10 m³). The number of stems per hectare is 120 and volume/ha is over 1,000 m³. The stand is being retained for another twelve years or so as a source of seed.

What a magnificent stand, and a super place to end the Study Tour. These massive Douglas will be remembered for a long time by those of us fortunate enough to have seen them.

Bill Wright, thanked Mr. Crispiels for giving us his time to show us some truly fine stands of timber.

From here we drove north to Brussels where we were staying over-night. After the dinner, the President thanked most sincerely Baron Alain de Jamblin for all his help in making the 1989 Study Tour such a success and presented him with a wooden bowl of evergreen oak (*Quercus ilex*) specially carved by Peter Sweetman for the 1989 Belgian Study Tour. He also thanked the Meetings Committee for their hard work with the organisation

of the tour.

A final thanks went to our driver Thomas Murphy. He did a great job. This was his fourth Study Tour and it was suggested that the Society should now make Thomas an honorary member!

Richard Jack

List of participants:

John Barrett, John Brady, Myles Cosgrave, Maureen Cosgrave, Michael Costello, Jim Cronin, Jim Crowley, Cuimin Fahy, Gerry Fleming, Mathias Fogarty, Lily Furlong, Frank Gibbons, John Greehy, Dick Griffin, George Hipwell, Dermot Houlihan, Jim Hurley, Richard Jack, Pat Kelleher, Denis Keane, Larry Kelly, Pat Kelly, Seamus Kennedy, Joe Kilbride, Edgar Lee, Jimmy Lehart, Eddie Lynagh, Gerard Mawn, Kevin McDonald, Michael McElroy, James McHugh, Con Nyhan, Michael O'Brien, Paddy O'Kelly, Tim O'Regan, Denis O'Sullivan, Tom Purcell, Joe Treacy, Ari van der Wel.

Convenors: Eugene Hendrick,
John Fennessy

President: Bill Wright

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To coincide with Ireland's Presidency of the EC and "Earth Day 1990" the Society of Irish Foresters and Coillte Teo. are jointly organising a series of guided forest walks together with the Northern Ireland Forest Service. These walks are scheduled to be held on Sunday 22nd April commencing at 3.00 p.m. at a number of venues throughout Ireland.

John Fennessy



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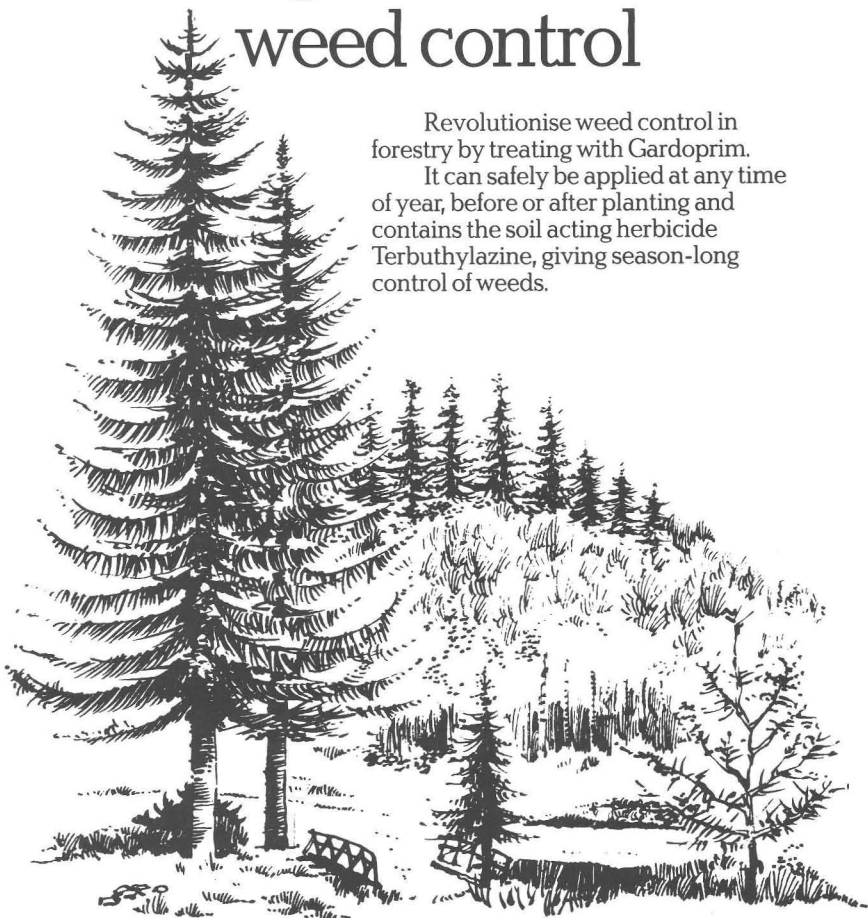
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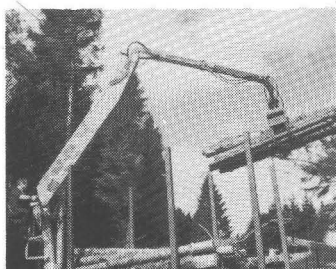
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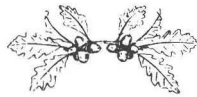
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KERRUISH, C. M. and SHEPHERD, K. R. 1983. Thinning practices in Australia. A review of silvicultural and harvesting trends. New Zealand Journal of Forest Science, 47:140-167.
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