
Society Activities

Illustrated Lecture in Dublin

AN illustrated lecture was held in the Shelbourne Hotel, Dublin, on Saturday, 15th December, 1962.

The President, Professor Clear introduced the first speaker, Mr. D. McGlynn. He expressed the appreciation of the Society to Mr. McGlynn for volunteering to speak, at very short notice, instead of Mr. Joyce who was unable to be present due to illness.

Mr. McGlynn prefaced his illustrations with a short *resumé* of the visit to Holland in which he and Mr. Joyce participated. They had gone as representatives of the Department of Lands, on a tour of that country. The tour was held under the auspices of F.A.O., and organised by the Dutch forestry service. He briefly described the country, emphasising its more unusual features. Holland, he said, was a flat land, being the basin of three great rivers. Its highest point did not exceed 1,060 ft., and were it not for the sand dunes and man's endless battle against the sea, some 40% of its area would be under water.

Holland's average temperature, he told us, was 50° F. to 75° F. Its annual rainfall was, 30 ins. and was well distributed throughout the year. The soil was sandy and rather poor, with most of the forests situated on those areas often subject to water shortage.

Forest land was of course necessarily restricted due to the high population density. At present there were, however, some 390,000 acres of coniferous, and 91,000 acres of broadleaved high forest. Coniferous species were planted in the following proportion:—

Scots pine	...	75%	Japanese larch	11%
Douglas fir	...	8%	Norway spruce	7%

With some Corsican pine, Sitka spruce and contorta pine.

We were told that the State owned 19.5% of the forest, though it controlled 35%. Private owners had 58%, co-operatives 15%, and 7% was owned by public companies. An interesting facet of Dutch forestry was the very large area, amounting to 99,000 acres, of single row trees.

Very little timber was exported and that which was, was primarily pulpwood. Timber consumption was, however, high and some 233m. cubic feet were imported annually. Forest policy had three main objectives.

- i. The production of timber.
- ii. Nature conservation.
- iii. Recreation.

In Holland working conditions were good and the forestry workers well trained.

Among the many interesting photographs shown by Mr. McGlynn, were illustrations of poplar and larch plantations, Corsican and Scots pine seed stands, and Douglas fir stands at different spacements. Here it was noted that, though there was a material increase in diameter due to wider espacement, total volume and height growth did not substantially differ. Many slides of up-to-date forest machinery were seen, including barking and snagging implements, extraction trolleys, forest tools and equipment.

The President thanked Mr. McGlynn for his instructive and informative talk and introduced the next speaker, Mr. L. Gallagher. We were informed that Mr. Gallagher had returned to this country a short time previously, from the United States, where he had spent a year at the University of Washington, Seattle, as a Kellogg Foundation Fellow.

Mr. Gallagher commenced his talk by briefly reviewing, with the aid of a map, the principal forest regions in the United States. These regions, broadly classified were:—

1. The Pacific Coast conifer belt.
2. The Rocky Mountain or inland conifer belt.
3. The Lake States mixed forest.
4. The north-eastern mixed forest.
5. The south and south-eastern "pine" forests.

Of these, Mr. Gallagher had visited the Pacific Coast, Rocky Mountain, Lake States and north-east areas. He pointed out on the map, routes taken through these forest regions, and he proceeded to illustrate with photographs, the main guiding factors governing forest management, especially in the west and north-west. Silvicultural, technical, and industrial aspects were illustrated; and also many of the greatly impressive scenic vistas which abound along the western seaboard of the United States.

Rather than following the route of any particular journey made in that part of the U.S., the speaker demonstrated with his illustrations, the pattern of vegetation types from the west coast, inland.

(a) *Californian*

First the "Chaparral" was seen, which consisted mainly of scrub forest vegetation. Species present were—*Ceanothus*, *Eucalyptus*, evergreen oak, etc. This, he said, was essentially protective forest, against soil erosion, and for water conservation. It had little timber productive value.

The redwood forests, where active forestry of a specialised nature took place and which in size and grandeur were the most striking of the forestry world, were then shown. These were pure stands of *Sequoia sempervirens* and understandably, they posed special problems for management and lumbering, due to the enormous height of the individual stems and consequently, the difficulty of felling safely. Another unusual aspect seen, was their capability to reproduce vegetatively from the stump.

Moving inland to the middle and southern Californian region, the rapid transition to desert was seen. Here sage brush growing on a very primitive soil type dominated the sparse vegetation.

Inland from the coastal region, in northern California, Douglas fir occurred immediately east of the coastal fog belt; this gave way to an oak wood prairie association, typified by large expanses of prairie grass and scattered clumps of evergreen oak. This area occurred in the valley between the coastal range and the Sierra Nevada.

Rising up through the Sierra Nevada, the first species met was the "Digger" pine (*Pinus sabiniana*) at elevations up to 3,000 ft. Further up, at 3,000 ft. to 5,000 ft. there were associations of ponderosa pine (*Pinus ponderosa*), the white fir (*Abies concolor*) and the incense cedar (*Libocedrus decurrens*). At 5,000 ft. to 8,000 ft. one of the most spectacular species found was the *Sequoia gigantea*, and also the sugar pine, (*Pinus lambertiana*), the Californian red fir (*Abies magnifica*) and the Jeffrey pine (*Pinus jeffreyii*). From 8,000 ft. to the timber line, grew lodgepole pine (*Pinus contorta* var. *latifolia*), western white pine (*Pinus monticola*), and the mountain hemlock (*Tsuga mertensiana*). Samples of the vegetation types were illustrated by photographs taken in the Yosemite National Park; there also some striking examples of *Sequoia gigantea* were to be found, and the various pioneering species growing at the higher elevations.

Over the ridge of the Sierra Nevadas and descending in elevation, a rapid transition occurred from pine associations to the typical sage brush desert with a rather narrow intervening belt of grassland.

(b) *Pacific north-west region.*

In the coastal region, Douglas fir, rising from sea-level to some 2,500 ft., was the typical forest form. In the Cascade range, the main species was Douglas fir, and, associated with this, were many stands of red alder (*Alnus rubra*). This species was encroaching on the many clear-cut and burned areas, posing problems for regeneration.

In the crest of the Cascade range, particularly in the Oregon region, very fine stands of *Pinus contorta* were illustrated; further north this gave way to *Abies amabilis*. Associated with the *Abies amabilis* was *Thuja plicata* and *Tsuga heterophylla* at about 3,000 ft. At timber line, *Abies lasiocarpa* (the Alpine fir) grew and also some very stunted *Pinus contorta* sometimes in pure stands, but mainly in mixture.

(c) *Rocky mountain region and eastwards.*

East of the Cascades was the dry land farming region of cereal crop production, the hills and mountains here, bearing species of *Larix occidentalis* (Western larch) "Bull pine" and some Douglas fir.

Rising into the Rocky mountains in the Idaho-Montana area the major forest species was ponderosa pine. Although Douglas fir occurred here, its growth was very poor owing to insufficient precipitation, and frequently stagnation occurred at an early age.

There were illustrations of silvicultural practices in the cultivation of ponderosa pine, such as the methods of obtaining pure stands, frequently incurring the use of controlled fire. In this region also, overall vigour was noted to be less than in the coastal areas.

Finally, some slides of the typical prairie in central Montana demonstrated the situation prevalent throughout the northern midland states where forestry as such did not exist.

The President thanked the speaker, and commented on the value and interest to the audience of the graphic illustration of two different forest regions given by both contributors.

Pinus contorta in Ireland

A Symposium on *Pinus contorta* in Ireland was held in Hearn's Hotel, Clonmel on Saturday, 16th February. Papers were read by: Mr. O. V. Mooney, on the Origin, History and Provenance of the Species; Mr. J. O'Driscoll, on Improvement by Selection and Breeding; Mr. P. M. Joyce, on Growth and Yield and Mr. A. M. S. Hanan, on Timber Tests.

The President, Mr. McNamara, opened the meeting and introduced the first speaker, Mr. Mooney, to the members.

Mr. Mooney told us that it was the first time, as far as he knew, the Society had devoted a full session to a symposium on one tree species. It underlined the importance we attached to *Pinus contorta* in this country. To further illustrate this we were told that the Department's planting of contorta in the 1934-43 period was 14.2% of all species planted, whereas by 1952 the figure had risen to 40%.

On its history it was learnt that *Pinus contorta* or lodge-pole pine, as it is loosely called in Britain, was discovered in 1805, and was introduced into that country, from Oregon, in 1852, by Jeffrey. The first introduction to Ireland was not known, but what might be the earliest plantings had been recorded at Ashford Castle, Cong. These were trees planted in 1884 of which some fine specimens are still standing up to 97 ft. high.

The first serious planting of contorta was in 1918 in Ballyhoura, Co. Cork. Later, A. C. Forbes planted trees of *Pinus contorta* of the inland and coastal varieties at Avondale, and was so impressed with the growth of the coastal that he ordered further seed for expansion into State Plantations. From 1920 onwards, the seed was imported from many places, but notably from British Columbia, Washington Coast and more towards recent times, from a region known as Lulu Island in south-west British Columbia.

It was realized early on that here at last was a substitute for the scrub-like mountain pine (*Pinus mugo*). Many people did not, however, expect very much more from the contorta than they had from the mountain pine, and it was looked on as a pioneer species or ground improver. This outlook was to change when the superiority of its growth form over mountain pine became apparent, and it was realized that here was pulp and timber potential as well.

Turning to its natural habitat, it was seen, with the aid of a map, that *Pinus contorta* had a wide range; stretching from the Yukon in Alaska, 2,400 miles south, to California. Inland, it reached 1,000 miles to Wyoming, and further north, 800 miles, to Alberta. It was found from sea level to 11,000 ft. The extremes of climate varied from 11 inches, mean annual rainfall, in North British Columbia to 160 inches at Baranof Island, Alaska, and from regions where snow was rare, in California, to the opposite extreme at high altitudes. Resulting from this range of climate and geographic differences, there were many

variants of the tree; to such an extent that, in former days, these variants were known as different species. These were variously called *Pinus murrayana*, *Pinus latifolia*, *Pinus banksiana*, *Pinus bolanderi*, *Pinus virginiana* and *Pinus contorta*. Now it was regarded as being one species, of which Critchfield had listed four sub-species, *Pinus murrayana*, *Pinus latifolia*, *Pinus bolanderi* and *Pinus contorta*, and had designated certain geographical ranges to fit their botanical variations.

Botanical differences could most clearly be seen between the coastal and inland provenances. These differences were in needles: coastal—short, 1" to 3", narrow, dark green and inland—longish, 2½" to 4½", wide, yellowish green colour and branching: coastal—heavily furnished, large crown spread, dark rough bark, and numerous branches, 6 to 9 at each whorl and inland—foliage sparse, few branches, 5 to 7 at each whorl, and lighter smoother bark in its earlier years.

From observation of the various provenances growing in this country, the following became apparent. All provenances attributable to British Columbia were lacking in vigour and showed poor performance, particularly, on poor soil types and exposed conditions. They were, further, prone to severe attacks by pine sawfly, *Diprion pini*. The inland species from Utah, Sierra Nevada and Alberta did not show much better promise.

On the other hand, practically all good crops were traced to *contorta* from the Washington Coast and the Olympic Peninsula. These types showed consistently greater vigour and health and were particularly noteworthy for their ability to form crops on poor peat site types and even in very exposed positions. Of importance too was the fact that some of the older crops were showing promise of producing good stands of forest timber.

A comparison between the inland and coastal forms was then illustrated by figures. A thirty year old stand of inland *contorta* growing at 800 ft. above sea level under reasonably exposed conditions was measured in 1961.

Stems per acre	1,086
Average Top Height	36 ft.
Average Height of Crop	31 ft.
Average B.H.G.	14" (3½")
Volume per acre	1,182 cu. ft. (Hoppus)

On the same site type, the following could be confidently expected from a good coastal form.

	Quality Class I (29 years)	Quality Class II (31 years)
Stems per acre	540	720
Average Top Height	52½ ft.	44 ft.
Average Height	48 ft.	40 ft.
Average B.H.G.	23" (5¾")	20" (5")
Volume per acre	2,680 cu. ft. (Hoppus)	2,130 cu. ft. (H.)

As an extreme case of coastal contorta (Washington Long Beach) doing well at high elevation, severe exposure and on thin mineral soil, we had the well known stand at Ballintombay, near Rathdrum, where the elevation was 1,350 ft. Here at the age of 31 years we had the following figures.

Stems per acre	970
Average Top Height	39 ft.
Average Crop Height	34 ft.
Average B.H.G.	19" ($4\frac{3}{4}$ ")
Volume per acre	1,975 cu. ft. (Hoppus)

Inland *Pinus contorta* nearby on better ground and less exposed conditions had as yet failed to close crop and hardly exceeded 15 ft. in height.

Mr. J. O'Driscoll in his paper said that from the last speaker we learnt that there was a wide variation of performance with *Pinus contorta* in this country. This could be traced to the imported seed which had been collected over a wide geographical range. In his talk, he intended to tell us about the methods they were adopting to find the provenance best suited to growing conditions in Ireland and then to perpetuate and improve the strain from that source.

There were two methods by which a good source could be perpetuated. The first, seed orchards, was slow to build up; it was, however, the most exact method as it gave the true characteristics of the chosen trees; the second, seed stands, was an "on the site" method and was really an in between phase until seed orchards could be got into production. Seed stands could only give a supply of genetically superior seed of which the mother characteristics were certain, as there was no control over the pollen dispersal in a forest stand.

For the establishment of a seed stand we learnt that, from the provenances chosen, the most superior stand was selected and after that the better trees in this stand were located. Such characteristics were studied as, place in crop, vigour, stem form and crown. The chosen trees were then helped in every way by removing all competing neighbours and, particularly, inferior trees between seed trees.

For the establishment of a seed orchard, the initial selection of the plus trees was the same as that for seed trees, only, in this case the trees were subjected to a much more detailed scrutiny. After the plus trees had been located, the seed orchard itself could be considered. The scions, which were collected from the plus trees, by means of shooting, were grafted to vigorous stock previously laid out in the seed orchard. Once the graft became effective and the clones were established, the final stage was progeny testing and the eventual production of classified genetically superior seed.

Mr. Joyce said that growth was a general term meaning the gradual increase of a living thing by natural process, but that yield had a totally different meaning. This was the total amount capable of being harvested at a given time.

He said the estimation of growth was essential in forest management and that, while past growth could accurately be measured, future growth could only be predicted with uncertainty.

Yield tables, he said, were a tabular presentation of statistics of growth and yield, which could be obtained from three sources :

- (1) *Permanent sample plots*; plots covering a whole rotation from first thinning on.
- (2) *Period sample plots*; plots differing in age by a number of years and measured at intervals to give a series of measurements at different ages.
- (3) *Temporary sample plots*; plots covering a large series of age classes.

Though the latter method was the least accurate, it was used in most countries and was the method employed recently in constructing yield tables for *Pinus contorta* in Ireland. It had the advantage that years of preliminary plot treatment and measurement could be avoided.

Planting records, Mr. Joyce said, indicated some 84,000 acres of *Pinus contorta* in Ireland and it was felt that data on growth and yield of this species was desirable.

Three basic steps formed the method of yield table construction :

- (a) The construction of height-age curves (Fig. 1).
- (b) The classification of plot data by site classes in accordance with the curves.
- (c) Final yield table construction by plotting the various measures on top height.

We were informed that height-age curves of 97 samples, each representing 3 stems of *Pinus contorta* were constructed. These were selected objectively from census data representing 2,900 acres of coastal *Pinus contorta*. On the basis that top height was not affected by stocking within the range of plantations, understocked and fully stocked stands were sampled.

Height at 25 years was taken as the quality indicator, and quality class I ranged from 40 ft. to 50 ft., quality class II from 30 ft. to 40 ft. and quality class III from 20 ft. to 30 ft. at this age. This corresponded to site indices of 55, 43, and 31 respectively. The graph which also showed the mean curve for each quality class and the interpolated limiting curves was illustrated photographically by Mr. Joyce. We were told that of the 97 sample curves

- 30% were Quality Class I
- 50% were Quality Class II
- 20% were Quality Class III

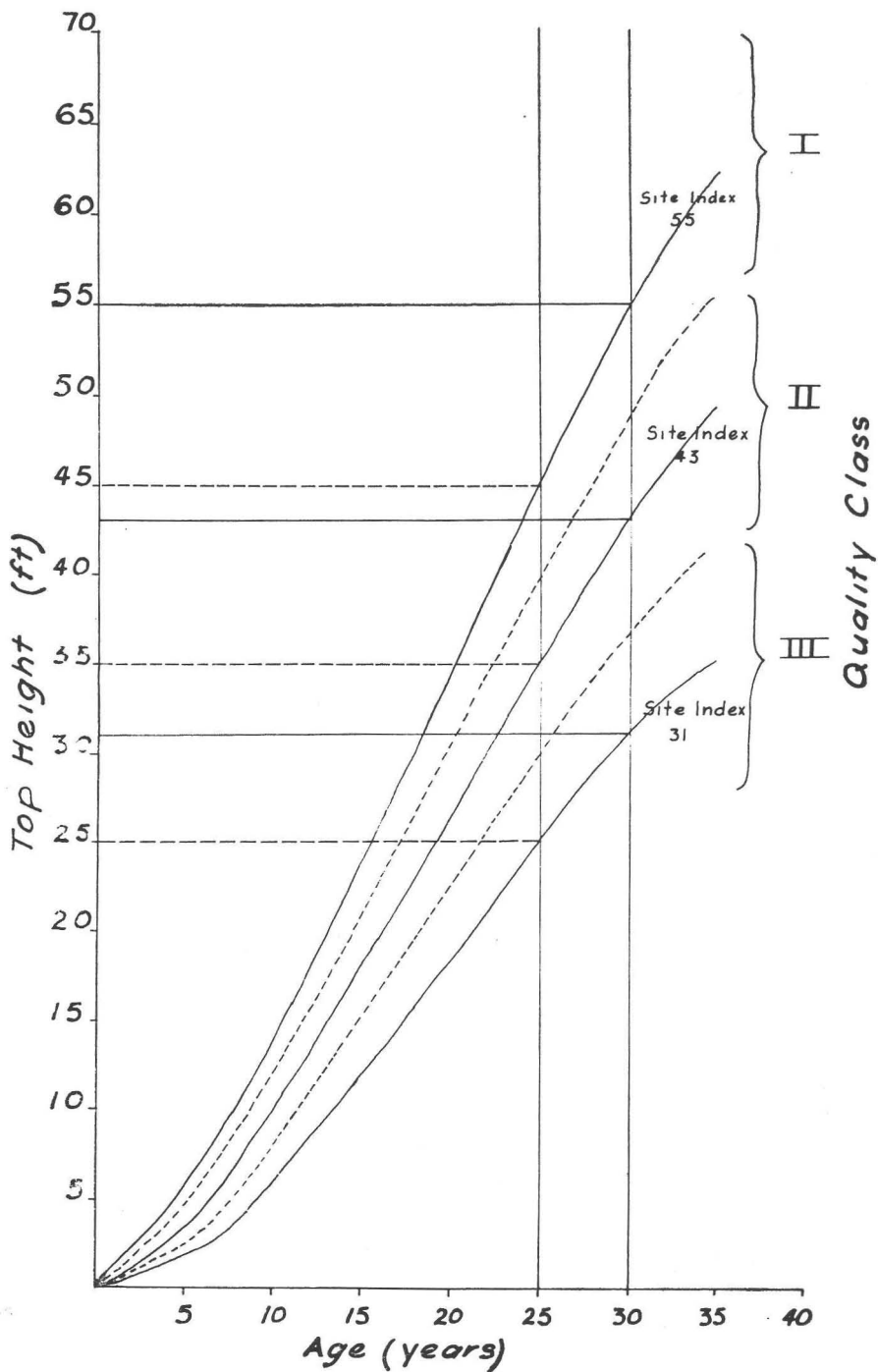


Fig. 1: Height—Age Graph.

Mr. Joyce went on to say that plot data was obtained from subjectively chosen sample plots in fully stocked *Pinus contorta* stands. A normalising moderate low thinning was marked in all plots in need of thinning to counteract the wide range of stocking which occurred.

Spacing in these plots was $4\frac{1}{2}$ ft. \times $4\frac{1}{2}$ ft. and age varied from 14 years to 38 years. Most of the plots were on better sites. There was a scarcity of data from the poorer sites, due to the difficulty of getting uniform fully stocked stands on poor sites which did not reach the 'thinning' stage until about 25 years. Data was also scarce from plots over 30 years on all sites due to the fact that there existed very few such crops.

We were shown illustrations of graphs relating the various crop characteristics to top height, used in the construction of the actual table. These were main crop volume; mean quarter girth of standing crop; mean height; and number of stems per acre against quarter girth as a check. A good relationship was shown for all characters against top height, except basal area, from which no relationship could be determined. It was decided that the difference between quality classes was slight enough to warrant a single graph or equation for each character. In the absence of information on growth and yield, we were told that volume removed at each thinning had to be estimated indirectly.

Mr. Joyce finally showed graphs illustrating, by number of stems per acre on top height, the approximation of present thinning practice to the British Forestry Commission thinning grades. The stocking of plots prior to 'normalisation' showed that the average thinning in Ireland approached the British Forestry Commission 'C' grade.

Mr. Hanan told us that the evaluation of the timber quality of the coastal sub-species (*Pinus contorta*) was not easy, when so comparatively little is known about it. This lack of knowledge was attributed to the fact that, first, in America the coastal species was considered to be a scrub tree and, second, that up until recently, there had been very little research done on this side of the Atlantic and the timber quality was not known.

In America, use had been restricted to the inland variety. This variety had been put to many uses, among which pulp and transmission poles were high on the list.

The first research on coastal contorta timber was done in Prince's Risborough. This was carried out on a small consignment of 43 year old timber from an estate in Scotland; only five trees were to be had, giving a volume of 69 Hoppus feet. Four years later, however, a sample load of 50 coastal contorta was sent to the English research station from Ballyward Property of Blessington Forest. The trees were 28 years old and comprised 405 Hoppus feet, average B.H.Q.G., 33", and height, 46 feet. In this load there was some visual evidence that two distinct provenances were involved; some trees having a finer

branch and better stem form. Though these were kept separate during testing, the only variation between the lots showed up in density and proportion of heart wood to sap wood.

After a year a report was published and from it came the following result:—Proportion of heart wood was 50% to 60% as compared to 25% in Scots pine. There was a noted uniformity of growth—ring-structure as seen in the lack of contrast between the spring wood and the summer wood zone. This gave the wood a quite uniform texture which was reflected in its easy planing and working properties. The Blessington load had, for a pine, a low density, averaging 27 lbs. per cubic foot at 12% moisture content; this, however, could be mainly attributed to the fast ring growth, averaging $4\frac{1}{2}$ rings to the inch. In contrast, the Scottish load had a density of 32 lbs. per cubic foot and $6\frac{3}{4}$ rings to the inch. This, in turn, was lower than Scots pine and Corsican pine. Strength tests were made for compression, static bending, impact bending, shear, cleavage and a wide variety of others, as well as tests for nailing, nail withdrawal, planing, sawing, etc. The strength tests showed the Blessington load to be slightly weaker than the Scottish load, or Scots pine and Sitka spruce of comparable age, or inland contorta tested in Canada. This was largely accounted for by the high proportion of wide ringed timber grown in the first five years which seemed to have a definite weakening effect. It was emphasized, though, that wide rings within reason, were not a sign of weakness. As far as sawing and general properties were concerned, the contorta was superior to Sitka spruce. Another good quality noted was the lack of inclined grain, which in Sitka spruce is so prevalent; this had particular significance where kiln drying was concerned. The timber in the Blessington load was considered to have seasoned well with remarkably little twist. Any checking was due mainly to large knots. Preservative tests classed contorta as resistant, as far as heart-wood penetration was concerned; penetration being easier than Sitka spruce but more difficult than Scots pine. For pulp, contorta was favoured more than any other pine, but must be used soon after felling.

In conclusion, it was thought there was a definite future for contorta. But for all aspects of utilisation it was stressed that particular attention must be given to pruning.

The speaker closed with this comment: that with contorta, so long as it was grown straight, pruned well, and delay in handling avoided, there was little need to worry too much over wide rings.

After the papers were read, several interesting questions followed; but as the hour was late these had to be limited. Mr. McNamara closed the meeting after congratulating the speakers on their excellent papers. He said, he thought we had all learnt many things to-night that we were only half aware of up to this; and felt sure that those who had managed to come, did not regret their journey. He particularly referred to the two members who travelled from Belfast to attend.

Illustrated Lecture in Galway

A meeting of the Society held in Galway on Saturday, 2nd March, 1963, was addressed by Mr. Padraic Joyce on "Forestry in Holland". Mr. Joyce was one of the participants in the F.A.O. Study Tour on Thinning held in Holland in the summer of 1962. The Study Tour was the fourth held under the auspices of F.A.O. and the party travelled extensively throughout the country.

The talk which was illustrated by colour slides covered not only the main theme of forestry in Holland but also took us on a colourful tour of the country. Mr. Joyce succeeded through his extensive selection of slides and by comment in creating a most interesting picture of life in the Netherlands. In addition to forestry we saw the vivid colours of the bulb fields and the flower markets; the landscapes of windmills, canals and picturesque houses; the cities with their quaint versus modern buildings and the people at work and at play.

The meeting was organised by a local committee under Mr. McMenamin and was presided over by Mr. McNamara, our President.

M.S.

Omagh: Symposium on *Pinus contorta*

THE contributions by Messrs. O. V. Mooney, J. O'Driscoll, P. M. Joyce and A. M. S. Hanan on aspects of *Pinus contorta* in Ireland (reported elsewhere in this issue) were given to a meeting of the Royal Forestry Society of England, Wales and Northern Ireland in Omagh, on 9th March, 1963. The Duke of Abercorn, Chairman of the Northern Ireland Division, had extended through our President an invitation to all members of the Society of Irish Foresters to attend.

The meeting, with an attendance of about 60, was opened by his Grace at 2.30 p.m. and the formal contributions were followed by a period of lively and stimulating questions and comment. Mr. M. MacNamara, President, thanked the Chairman on behalf of the Society of Irish Foresters.

An informal evening followed, organised by Mr. W. G. Dallas, which began with a showing of forestry films and continued for some hours with pursuits of a social nature in which audience participation became more pronounced.

On the Sunday forenoon following, those who remained were conducted on a tour of Lislap Forest by Mr. K. F. Parkin, Chief Forest Officer, and others of the Northern Ireland Forest Service.

N.O.C.