

Annual Study Tour

First Day.

THE tour opened on the 22nd of May with a visit to Ballygar forest, one of the oldest State forests in the country, and No. 6 in the forest register. In blustery weather conditions Professor Clear, President of the Society, welcomed members and hoped that the tour would be a pleasant one for all present. He also introduced the convenor, Mr. N. O'Carroll, who in turn introduced Mr. Silke, the forester, and his assistant Mr. Vaughan. Mr. Clarke, the District Inspector, extended a welcome to all members on behalf of the Minister.

Following the introductions the party moved to the first point of interest, an area where the remains of a Quality Class III Douglas fir crop was standing. Prior to the discussion, Mr. Silke gave a brief history of the area which was acquired in 1910. Most of the area under trees at that time was demesne planting. The first forester in the area was Mr. Murphy and since then many well known people had spent some time there. Following on a general history of the forest the particular history of the stand of Douglas fir was related. It had been planted in 1928 and had grown to Quality Class III standard when it was partially blown in 1957. Much of the timber had been sold as E.S.B. transmission poles. The yield from this would have been approximately £440/acre; £340 for poles and £100 for pulpwood. If the stand had been Q.C.I. the monetary return would have been

£1,214; £1,170 for poles and £44 for pulp wood. The question then arose of the best time to fell. It was pointed out that from the monetary angle the poles would give the best return at the moment and that they should now be removed instead of being allowed to mature by which time they would be worth 2/6 per Hoppus foot. From the Yield Table this stand had passed the climax of its C.A.I. but not of its M.A.I.; where both graphs intersect would be theoretically the best economic time to fell. It was felt that what was required was intensive research into the economics of the optimum time for felling.

At the present time, it was mentioned that the biggest fault with the poles being produced was their crookedness resulting in that only 5% got the very top prices. A suggestion for wider spacing giving 700 stems/acre at 35 years was made. This would cut out all cost of thinning and produce poles of various sizes. However, to keep stems clean, pruning would be necessary. Again economics enter the picture for it was felt that the cost of the pruning might prove uneconomic. We were told that at the present time 5/- per H. ft. is being paid for the pole when loaded; the cost of preparing it being from 1/6—2/- a H. ft. Placing all one's eggs in one basket was dangerous and a suggestion was made for a two storeyed crop of, for example, Sitka spruce, and beech. In this way danger from natural hazards could be reduced and a better use of the different soil layers could be achieved. This Sitka spruce could be clear felled, sold at £400 per acre and would still leave the beech as a secondary crop. It was pointed out that application of fertilizers would save the trees the trouble of searching for nutrients. If we were to make the best use of a particular site it should be given all the aids modern science recommends. On this note the party moved on to the second stop.

The next stop was at Aughrane C.19. The area was originally planted in 1928 with Scots pine/European larch mixture, cleared and replanted in 1952 with Norway spruce. On part of the site the Norway spruce was growing well while in a second area it was still in check. The problem which existed here was what to do with a clear felled site before replanting it. Before the original planting, the area had been a deer park and a suggestion was made that this area had not been colonised by the briars due to the deer. In the old crop the European larch had not grown well on the now grassy site. This seemed to indicate that there was a site difference between the two areas. Whether this difference was a climatic or soil one was difficult to state. No evidence of frost was to be seen and no records of it having occurred here were available. Though the general appearance of the area seemed to indicate that it was an ideal frost hollow, the presence of briars, which were resistive to frost, ruled this out. With regard to the possibility of the soil being gleyed, it was pointed out that this was unlikely from the topography of the area. The question of what should be done to get over the problem was put to the assembly. Members were told that it was impossible to plough the area due to the stumps

of the old crop. Treating the grasses with a weed killer appeared to be the only other method feasible to reduce competition. Dalapon was mentioned as a useful spray to kill all the grass for a season. By placing it around each tree the cost would be £5 per acre. It was said that Simazine if applied to the area would prevent the germination of all grass and weed seeds. However it was pointed out that none of these measures would be necessary if proper stand management were exercised prior to felling. This would allow a clear floor for planting.

Similar problems to those presented at C.8 were evident at the third stop, Aughrane C.30 (Sitka spruce p.16, clear felled 1958), but here they were a stage further advanced. This compartment was $7\frac{1}{2}$ acres in extent and when clear felled in 1958 yielded 756 stems of total volume 25,000 H. ft. Calculation suggested that the stand was Q.C. III.

As the area now stood no incentive had been derived from the previous stand to keep down ground vegetation and so reduce competition for the new crop. Consequently the initial planting problems were repeated and if this kind of management was to be maintained these problems would recur every time a new crop was planted. A step which was suggested to cut down this ground vegetation, was to encourage natural regeneration in wind blown gaps. Evidence of natural regeneration of Sitka spruce had been recorded in other forests so that efforts to encourage it in windblown gaps would not be fruitless. This stand, due to the early date of planting, was much neglected with the result that very little regeneration took place.

When felling occurred the stand was between Q.C. I and II. This augured well for the site because in the Volume Sampling Survey recently carried out, much of the Sitka spruce planted in the country was found to lie within Q.C.s III and IV. Quality Class I represented about 1% of areas measured.

Quality classes as an index to site productivity were frowned upon by some members and it was suggested that the continental method which was based on actual production per unit area would be better. It was put forward that if the same species were to be replanted on a site every effort should be made to improve its production rate. In this matter all modern aids should be availed of and to this end the services of a forest engineer would be most beneficial. It was thought that a new plough could be devised to plough between stumps. Members were told that in Holland ploughing has been classed as a site destroying factor on certain sites and that this held particularly for sandy sites where it caused the humus to be broken down very quickly. Another method of possible site improvement was to plant a mixture of hardwoods and conifers. From German experiences this policy had been known to decrease returns by as much as 10%. The view was expressed that what was required was correct site production data backed up by site investigation. It was held that the former would be gained from Working Plans and the latter by site analysis, taking into account the effect of the previous crop; finally that pre-planting preparation was

most valuable and more money could be well spent in improving a site before planting.

At the party's next halt, Aughrane C. 96 and 97, the performance of three different seed lots of *Pinus contorta* were seen on this site which was of an inland raised bog type. Originally the area, too wet to be ploughed, was hand drained. The 1960 planting of HC/30/56 contorta (Mountshannon) in C. 97 was superior to the 1961 planting of 36/d/58 (Herbst. Br. Columbia). At planting, each plant had received 1 oz. ground mineral phosphate. At the edge of the area some very poor 6/r/35 *Pinus contorta* (ex Manning) seed was growing. This area showed to all present the importance of selecting the right provenance of *Pinus contorta* and buying seed of superior quality and of known origin.

At the last stop before lunch, Aughrane Cs 54, 55, *Picea sitchensis* planted in mixture with *Pinus contorta* was to be seen showing the first signs of incipient check. Whether the Sitka would survive or whether it should be replaced by another species was the big question in areas like this. Post manurial treatment of such crops, it was put forward, might be the answer to this question. The rate suggested is 3 cwts. per acre of 10/20/20 and the best method of application would be from the air. Another method would be to remove the heather, one of the causes of this check, but it was said that this would be very expensive. Here the provenance of *Pinus contorta* planted was Lulu island. The chief characteristic of this provenance was very much in evidence, i.e. the abundant male flowers.

Following lunch in Roscommon, Aughrane C. 37 was visited to see an inland provenance of *Pinus contorta*. This seed had been supplied by Rafn and its origin was given as Br. Columbia. Much of this type of seed had been imported in the 1930s; it was felt that if this is how it has grown under Irish conditions, the inland provenance had no future in Irish forestry. One suggestion was to interplant it with Sitka spruce instead of the more vigorous coastal provenances. On the whole, however, taking this crop as an example, there did not seem to be much hope for inland provenances.

The first day of the tour concluded with a visit to a blown area in Mountbellew Forest: Cloonavihoney. Cs 1 & 2. The area was planted in 1931/32 and in 1961 when struck by hurricane 'Debbie' a total of 108 acres were blown, comprising compartments 1—6. The area was at an elevation of 200 ft. above sea level. Prior to the storm some light thinnings had been carried out in 1955 and 1957. In 1959-60, 189 poles of 3.8 H. ft. each were removed per acre. Another thinning was completed in 1961, before the storm struck, and on this occasion 92 poles per acre of 6 H. ft. each were removed. Prior to the storm two sample plots gave an average of 295 stems of $7\frac{1}{2}$ B.H.Q.G. per acre, with a total height of 55 ft., and 45 ft. to 3 ins. diameter. Subsequent to the storm 203 stems, standing and blown, were measured per acre, giving a volume of 3,535 H. ft. per acre. In all 65% of the area was blown.

Most of the blown trees had snapped off rather than been up-rooted. Members were informed that this type of blow necessitated quicker removal from the ground as the timber deteriorated much quicker than when uprooted. It tended to dry out very fast and from a pulp mer-



Mountbellew Forest—Cloonavihoney. Sitka spruce area blown in hurricane 'Debbie'.

chant's point of view it was not a very good buy. Consequently, the price for this timber, blown, was not what would be expected if it were standing. Cost of removal was also said to be higher than in normal thinnings and felling. However, despite its drastic appearance the loss of volume per acre was only about 250 to 350 H. ft.

It was felt that a more drastic thinning regime in the earlier years of the plantation would help to build up wind stability. Wider spacing at planting was recommended. The problem which now emerged was to get the area replanted as quickly as possible before ground vegetation takes over.

The first day's proceedings concluded with this much discussed problem. Before returning to Ballinasloe a vote of thanks was passed in appreciation of the work done by the forest staff to make the first day's tour so interesting.

J.O'D.

Second Day.

On the morning of the second day of our tour the members visited the well known Gowla Bog and associated undertakings, by kind permission of Comhlucht Siucra Eireann. The first stop was at Kilure, an area of 236 acres where we were met by Mr. Coffey, Manager, and Messrs. Walsh and Bracken, Officials of the Company.

Information contained in the hand-out showed the application of different treatments to three areas in order to bring them into grass production. The preliminary treatment was, however, Mr. Coffey told us, common to all the subject matter, which was typical midland raised bog of from 10 ft. to 25 ft. depth with *Calluna*, *Eriophorum Spp*, and *Sphagnum* predominant in the vegetation.

Drains of 20 ins. deep at 12 ft. 6 ins. intervals were first opened with the Company designed "Carlow" plough. The surface of the bog was later rotavated, the seed then rolled in and the fertiliser applied.

The variations in treatment between the areas were, in the grass variety, and the proportions of other seed, sown; the treatments on three areas demonstrated being as follows:

1958: 30 cwt. of Slag per acre was applied as first part of the general treatment previously mentioned.

Area X—76 acres.

Sown 20/5/59	20 lbs. Perennial Ryegrass	} Per acre
	2 lbs. Alsike Clover	
	1 lb. New Zealand Clover	

1959: Potash	3 cwt.	} Per acre
Sulphate of Ammonia	3 cwt.	
Copper Sulphate	20 lbs.	
Borax	10 lbs.	

1960: Muriate of Potash	4 cwt.	} Per acre
Nitrate of Soda	3 cwt.	

1961: 5 cwt. Potash	} Per acre
2 lbs. Copper Sulphate	
1 lb. Sodium Molybdate	
8 tons Factory Lime	

Area Y—40 acres. Same treatment as X

Sown 2/5/59	20 lbs. Italian Ryegrass	} Per acre
	1½ lbs. Alsike Clover	
	½ lb. New Zealand White Clover	

Area Z — 120 acres. Same treatment as *X* and *Y*.

Sown 7/6/59	10 lbs. Timothy	} Per acre
	2 lbs. Alayke Clover	
	1 lb. New Zealand Clover	

The sections demonstrated carried a good green surface vegetation in which clover was particularly prominent. Mr. Coffey told us that the season of sowing had been a particularly bad one and that as good a sward as was hoped for, had not been achieved.

The fact that the drains had now closed to even less than 12 ins. in depth was commented on, but Mr. Coffey said that it was routine to clean every second drain by a mechanical drain cleaner, leaving the intervening drain to close.

The rotavating treatment applied to this bog gave rise to a good deal of rush vegetation coming through in clumps; but now having drained, fertilized and possibly burnt the bog vegetation, seeds were sown on the surface of the peat and better results were obtained in this way; also there was less trouble with ruches. However, Mr. Coffey told us that the rush could be killed and kept under control by spraying with 2.4D.

Questioned on the effect of the treatment on the fertility of the peat Mr. Coffey said that a considerable change was wrought in the first four or six inches of the surface peat, in fact the pH in this surface layer was found to be 6 near to the surface but dropped rapidly below this level to the normal bog pH of 4 or less. The best results of seedling were obtained from the New Zealand Clover. Grasses tended to colonise less rapidly.

Mr. Galvin commented on the presence of Yorkshire Fog grass in the sward. He thought it might tend to stabilise the skin of the bog and possibly have a beneficial effect that way. Mr. Coffey, however, took the view that it had little value and would be glad to see less of it around.

Being further questioned on the preliminary treatment Mr. Coffey said that although the heather was sometimes burnt it was not vital to do so. It was quite sufficient to sow directly with the slag treatment and this took care of the heather: Sheep were brought in practically immediately. The idea of deep drains to 3 ft. every 30 yards was not effective and when applied it only really improved the drainage for a few feet from the drain. Frequent shallower drains of 12½ ins. were much more effective.

Questioned on the subject of costs, Mr. Coffey said that £2 p.a. covered the cost for this area, including fencing. Plough draining cost 15/- p.a., rotovating 45/- but it was felt that the work would now be done more cheaply.

Turning to the current management of area "X" Mr. Coffey told us that it had been grazed closely for 300 days and over all the winter.

The stocking at that time was 3 ewes and lambs per acre until the 10th May at which time they were taken off. The vegetation would be cut in August and silage made on the ground in portable corrugated iron silos. The party was shown a flock of fine strong looking sheep grazing on area 'Y'. Mr. Coffey informed us that the ewes on view were known as 'Borris Ewes', the cross of a Wicklow ewe and a Suffolk ram, and taking years of grazing and lambing into account he reckoned they made about £5-£6 p.a. Asked if trouble arose when sheep got stuck in drains Mr. Coffey said that this was rare and that the sheep got wise to the situation very quickly and jumped across the drains. The second generation of sheep on the bog were quite safe from this danger.

Mr. Coffey emphasised the value of shelter not only to the sheep but also for the better growth of grass. He said that though shelter may not have been appreciated in earlier work shelter belts of trees were now integrated with all their farms. It was not, however, apparently intended to continue to manage this bog for sheep but it was to be ultimately turned to grass meal production or horticultural undertakings.

Having spent an interesting hour at this farm we then moved on to Moylough where we were met by Mr. Murphy.

Moylough. 300 acres.

This bog was treated at a later date (1960) than Kilure and was drained at 12 ft. 6 ins. intervals but no rotovating was done, the sowing of seed being direct on to the existing bog surface as described previously.

The initial dressing was 6 tons of Factory lime spread by Wright Rain between April and September, 1960. A dressing of 10 cwt. Gafsa, 5 cwt. Muriate of Potash, 50 lbs. Copper Sulphate and 20 lbs. Borax was also applied. One lot of 30 acres was sprayed with Copper Sulphate at the rate of 2 lbs. per acre.

Grass Seed Mixture. 20 lbs. Perennial Rye Grass, 5 lbs. Timothy, 2 lbs. New Zealand White Clover.

In moving on to this bog from the road, as at Kilure, it was noticed that a system of metal strips had been laid down to give a firm weight bearing road. These were originally used for temporary air strips and consisted of strong perforated strips of iron 10 ft. \times 5 ins. which were linked to each other laterally to give a continuous un-rigid strip. Some members thought that metal strips would have application in forestry practice but their cost was not ascertainable. It was said in discussion that these strips worked well as long as they were on very even ground but tended to buckle, twist, turn on uneven surface conditions.

Asked by the members what "Wright Rain" implied, Mr. Murphy told us that this was a machine which by centrifugal force action could sling sludged factory lime considerable distances (50 yards) on either side of the moving machine. The "Wright Rain" machine was drawn

by a Fordson Major Tractor and could spread out 18 tons of lime in 40 minutes. The total cost of the ground preparation for this bog was £17-£18 p.a. including sowing and fertilizing but not the Factory lime, which was not included in the costing.

The machine used for drain renewing was demonstrated and proved to be a "Milo" German draining machine which cleaned the drains by means of a rotating screw which drew the peat up and ejected it on either side of the drains.

The party then adjourned for a short period of time to the mother farm at Gowla where Mr. Coffey put on a demonstration of the Carlow plough drawn by a Platypus tractor as used for preliminary drainage work at the bogs we had just seen. It was also noted that water was pumped from a river source at the main buildings for two miles out on to the bog for use in spreading lime and possibly also for fire protection and plant watering.

Concluding our visit to Gowla, Professor Clear offered the thanks of the members and himself to Mr. Coffey and his colleagues for having arranged such an interesting programme and for giving so much time to us at such a busy period of their year.

The party then proceeded to Ballinasloe and having taken dinner at leisure set off for Mountbellew, arriving about 4.30 p.m.

Mr. Cashman (Forester i/c.) said that a part of Mount Bellew Demesne was sold to the Department in 1941 by Sir Henry Grattan Bellew and that about 450 acres of this acquisition was good agricultural ground.

Mr. O'Carroll, the Convenor, first presented a comparison between a stand of Norway spruce and Sitka spruce on what appeared on the surface to be similar sites within some fifty yards of each other. The crop had been established in what appeared to have been an agricultural field.

Information given for the two crops was as follows :—

Mountbellew Demesne. Compt. 14. Planted 1941.

Norway Spruce. Top ht. 45 ft. at 21 years. Quality Class I
(i.e. 5 ft. higher than mean of Quality Class I).

<i>Actual Crop</i>	<i>Yield Table (at 25 years top height 46 ft.)</i>
S.P.A. 720	750
Mean Q.G. 5¼ ins.	5 ins.
Vol. per acre 2,700 H.ft.	2,600 H.ft.

Sitka Spruce. Top ht. 51 ft. at 21 years Q.C. I-II
(Coincides with division between division of Q.C. I-II).

<i>Actual Crop</i>	<i>Yield Table (Mean of Q.C. I-II at 21-30 years)</i>
S.P.A. 420	600
Mean Q.G. 6¾ ins.	5½ ins. (approx.)
Vol./ac. 2,500 H.ft.	2,600 H.ft.

The Convenor then gave us a comparison of total production at 50 years (allowing Norway spruce an extra four years of C.A.I. at 50 years)

Norway spruce	...	11,300 H.ft.
Sitka spruce	12,300 H.ft.

Although the two sites appeared similar on the surface the soil pits showed a different profile and a different depth of free soil over the gley zone and Professor Clear in making this point thought that this depth might be reflected in production. While Mr. Johnston thought it might be deceptive to rely on the showings of one soil pit, Mr. Morris thought the sites were not the same and that if the forester changed from Norway spruce to Sitka spruce at the time of selection there probably was a good reason for doing so.

The discussion pertained to volume production as a criterion of site quality and it was said that for overall production Norway spruce might be the best crop to grow as Sitka might have been held back by frost, as pointed out by Mr. Johnston. It did appear, however, that different thinning intensities had been applied to the different species, Norway spruce 720 S.P.A. $5\frac{1}{4}$ ins. B.H.Q.G. Mean Tree and Sitka spruce 420 S.P.A. with $6\frac{3}{4}$ ins. B.H.Q.G. Mean Tree. The discussion revolved around this point and Mr. Campbell said that with a bigger girth the Sitka would have a higher value than the Norway and that even in the same girth class the latter might not be more highly valued.

Asked by Mr. O'Carroll if he was worried about ring width, Mr. Campbell thought that one must accept current facts in the matter, that the bigger the trees the better the price and there appeared to be no price distinctions at this stage between the species mentioned.

A discussion on the thinning intensity of the Sitka crop ensued and Professor Clear thought the thinning a good heavy one in the modern sense, though maybe somewhat late in this crop. He was supported in this view by Mr. Campbell who thought that the forester should try to get his trees into the higher value size category as soon as possible. Mr. de Grúinéil added that Mr. Silke who had long experience in forestry believed in the idea of isolating the main crop tree from the earliest possible time and thinning heavily for crop stability. Dr. Jack emphasised the view that it pays to thin heavily on poor sites, and accordingly much lighter on a good site like this.

The party then moved into a crop of oak, also on a good soil type which the Convenor told us was planted in 1941 with Japanese larch which was removed in 1956. The present top height was 28 ft. which indicated Q.C. I-II oak and assuming constancy of production for 50 years the Convenor estimated that there would then be 1,800 H. ft. p.a. standing with a mean Q.G. of 6 ins. At 100 years the standing crop would be 2,750 H. feet with a mean Q.G. of $14\frac{1}{4}$ ins. and intermediate produce of 3,500 H. ft. The general mood was one of optimism about this crop although it contained a high percentage of malformed trees

at present. Mr. Morris thought that the Department should be prepared to raise hardwoods on sites such as this and rule economics out. Mr. McNamara took the view that the best oak should be retained and conifers underplanted. Dr. Jack thought that the best treatment would be to prune the double leaders on the good oak trees having thinned heavily to 150 hardwoods p.a. and underplant.

O.V.M.

Third Day.

Our third and last day opened with a visit to Kylebrack Property of Loughrea Forest. Mr. T. Grúinéil welcomed the party on behalf of the Minister for Lands and introduced the Forester-in-Charge, Mr. J. Mahon and his Assistant, Mr. P. Lonergan.

Loughrea Forest was he explained the most easterly of the Department's Forests on the Slieve Aughtys. The word Aughty derived from Aughta, a maiden of the Tuatha de Danan who married into the district. Her dowry was two milch cows which were renowned for their milking qualities. Kylebrack meant the speckled wood and was mentioned by the Four Masters and so we could assume that this area has been wooded since early times.

Loughrea Forest comprised some 4,000 acres mostly on Old Red Sandstone which was blanketed with a deep peat cover. Kylebrack Property comprised about 1,000 acres and here State plantings first began in 1933. Species used were Sitka spruce, *Pinus contorta*, Norway spruce and there were some small areas of good Scots pine and European larch. Corsican pine was the only species which had proved completely unsatisfactory. The area was perhaps best known for its *Pinus contorta*.

Our first stop was in C.15 where main interest centered around a very fine plus *Pinus contorta*. Mr. O'Driscoll explained the idea behind the selection of these plus trees. It was, he said, a combined effort of the Forestry Division and the British Forestry Commission to select the best seed trees for *Pinus contorta*. The points sought in the selection of a plus tree form and straightness of stem, taper, crown shape and length and branchiness. The particular tree under examination was, he said, one of the better ones selected in a country-wide search and was of Washington Coast origin.

Scions had been collected by shooting them off the upper crown. Mr. O'Driscoll said that after grafting to suitable stock they would be planted in a seed orchard. Some scions had been sent to England and also to Denmark. The basis of future seed orchards both in England and Denmark were likely to come from Ireland. Mr. Mooney referred to the personal bias in the selection of seed trees but said it was the best that could be done at present, but that attempts were being made to find a less subjective method. Professor Clear also commented on the method of selection and asked to what extent the quality points of a particular tree might be influenced by its position in the stand. This he said, was obviously not the most vigorous tree. Mr. Galvin said that seed would not be available for about 10 years after the establishment

of a seed orchard and that we should collect our seed from the best trees only in the intervening years. Mr. Mooney said this was being done and that selected seed stands were being treated for the production of seed. Mr. Mahon said that seed collections were made in Kylebrack but that the plants from these seeds did not return for planting in the district. Mr. Galvin suggested that we should cut out imports of *Pinus contorta* seed and concentrate on home collections. In this he was supported by Professor Clear.

Leaving the good area the party moved on to Compartment 8 where the crop, now 27 years old, was very poor and stunted. Mr. N. O'Carroll in opening the discussion said that it was an example of a problem not infrequently met with. The seed was of the same provenance as that of the diamond beds in Bansha where the crop was very good. There, however, it had been cultivated and manured. Mr. Morris pointed out that *Sphagnum* was very plentiful on the site and the trees were probably being drowned. He drew the group's attention to the fact that on the drier ground the trees tended to be better. Drainage seems to be a necessity but would present great practical difficulties now. Mr. McNamara said it was necessary to be hard-hearted and plough even at the expense of some of the crop. The crop had no future as it was and something had to be done, he suggested drainage first and manuring afterwards. Mr. Johnston said the crop had no rooting depth at present and quoted instances in Donegal and elsewhere where an examination of roots on similar sites showed a rooting depth of only 2 inches or so. Mr. O'Carroll, however, said that the roots on this site go down 2 feet or more. Mr. S. Campbell suggested the crop to struggle on and cashing in at the first opportunity rather than the creation of one big experiment. Mr. Grúinéil said that in a somewhat similar crop in Tuam they had tried various treatments, draining, mulching and manuring and now three years later the stand showed considerable improvement. Opening of drains alone was not effective and he suggested that drainage was not the most important and that manuring must be credited with the greatest improvement. Mr. O'Carroll said that seed of this origin had produced a good stand in Bansha and so it must have been the site itself which had produced the present result. Mr. Morris said that if we were to abandon this type of site and crop we would have to take another look at acquisition policy. Mr. Mangan suggested that the technique of digging a mound and leaving a water filled hole beside it might be responsible; present technique of plough ribbon and drain would no doubt give an improved crop.

After an enjoyable picnic lunch at Marble Hill the party visited Woodford Forest. Here Mr. O'Carroll introduced the District Officer, Mr. Gibbons, the Forester, Mr. Dungan and his Assistant, Mr. Quigley.

Mr. Dungan said that the property we were visiting, Derrycrag, was originally old oak woodland and was acquired by the Department in 1910. Operations commenced in 1913 and now except for this small area we were standing in this wood had been converted to conifers.

This small block of oak had been left as a sample of what the crop had been. He did not know if the oak here was coppice and standards or natural regeneration. It had been grown for smelting and for tannin and the barking pits could still be seen in places. Smelting in the area had ceased *circa* 1800. Professor Clear said the age of the present crop was about 150 years and so probably was coppice. After the Napoleonic wars areas like this were abandoned and went to coppice. This wood probably followed this pattern.

Mr. O'Carroll said the question of how best to preserve these old woods arose, that they would not keep themselves and would need some treatment but the old indigenous strain could be kept. Mr. Mooney said natural regeneration was out but we should collect the seed and plant up with the same stock. Mr. Morris said that if this was an indigenous wood should it not preserve itself as a climax species. Mr. Dungan said that acorns in this wood were very scarce and he did not remember any mast year. It was agreed that the wood would not need replacing for another 100 years and it was suggested that so far as possible stocking should be with the original strain even if only a few acorns a year were found.

Our next stop was on an adjoining area originally conifer but now bare land. This had not been originally woodland but agricultural land planted up in 1914 with spruce. It was blown down in the storm of September 1961 and was now to be replanted. The upturned roots presented a problem and Mr. Mangan thought they might be shaken with explosives. On the question of choice of species it was felt that butt rot could be a problem for the next rotation and that hardwoods or poplar might be the wisest choice and Mr. Mangan suggested Douglas fir. Mr. Morris thought that as it was a suitable poplar site we should encourage by example and plant it with poplars. Mr. McNamara said the bulk of our plantings were of Sitka spruce and *Pinus contorta*, that here we had a special site and we should have something special in it. He suggested oak as this seemed one of the few places where it had a fighting chance of paying its way. He suggested close planting and after some 15 years the selection of and thinning to the final crop.

The party then moved to Derrygill where we saw a plantation of Scots pine planted in 1935. The seed origin was given as Scotland and was supplied by Ben Reid and Capt. Dunbar. The top height was 44 feet and the estimated standing volume 1,860 Hoppus feet. The crop corresponded to Quality Class I of the British Yield Tables. On a present day selection Norway spruce might have been used instead of Scots pine. Mr. Johnston thought Douglas fir might have been the best choice but Mr. Mangan said the present crop would pay for itself if given time, as transmission poles. He suggested no further treatment for the present. Mr. Mooney agreed and said that if thinned now there would be an influx of ground vegetation but if treated as a transmission pole crop you could single out your tree at 20 to 30 feet apart and free them leaving the remainder to keep the ground vegetation in check.

Professor Clear said Scots pine should not be managed for poles and there was more to this species than mere pole production. In places Scots pine commanded £1 per cubic foot at the moment. This crop, he said, was slow and steady, a yield of poles could be availed of but treatment should not solely be aimed at a pole crop. The understory of beech which had come in here would be a great asset to the management of this crop. If Scots pine is to be preserved we should be considering improvement of seed collections as was being done with *Pinus contorta*. Mr. Mooney said this was in contemplation. Mr. Galvin said his father would rather do without rather than buy Scots pine of continental origin. He used only Scottish seed and probably until the Forestry Division began planting, no continental Scots seed was used.

It was pointed out that Scots pine is a first class structural and joinery timber and that volume was not the final criterion but the price it commanded at maturity. Mr. J. White said that larch or Scots pine made a nicer chipboard than spruce. The people, he said, who paid £1 per cubic foot only did so for a select part of the tree and they gave nothing for the rest so that their overall price per cubic foot was not really so high. There was now a demand for first quality Scots pine for veneer which was absent 10 years ago.

Our last stop for the day was in a *Pinus contorta* stand planted in 1937 in Lacken Property. Mr. Mooney said that Mr. P. Joyce had recently produced a Volume Table for Coastal *Pinus contorta*. It was based on 2,081 sample trees and gives volume to 3 inches top diameter from Q.G.B.H. and top height. In the September coming Messrs. P. Joyce and G. Gallagher hoped to have completed their Yield Table for *Pinus contorta*. Height/age curves were based on 97 sample trees and other information was based on data from 101 temporary sample plots. Quality Class was based on top height at 25 years. Top height for the 1st Quality Class was 40-50 feet, 2nd 30-40 feet and 3rd 20-30 feet.

Professor Clear said that yield tables if properly used were a valuable tool. They helped in management but they should not be taken as the basis of comparison between one crop and another or one species and another. It was a tool for predicting yields and not for comparison. Mr. Gallagher explained that one of the difficulties in preparing the table was the diversity of approaches to the thinning of *Pinus contorta* and so their table was only provisional and was based on such crops as were available. Dr. Jack objected to the term Quality Class and thought Growth Class would be more accurate. He agreed that the Yield Table was a useful tool but only in competent hands, in inexperienced hands it could be very dangerous.

The Annual Dinner of the Society took place at Ballinasloe on the last night of the Study Tour. The Society was indebted to Irish Forest Products for the wines.

M.S.