

Report of the First Annual Excursion to the Valley of the Suir, June 7th to 10th, 1943.

BY T. McEVOY.

Clonmel was chosen as headquarters for the Society's first excursion. The choice proved ideal; accommodation was excellent, and a large and exceptionally interesting area of woodland was within easy range. The weather was favourable and the success of the venture more than justified the decision of the Council to hold the excursion, in spite of transport difficulties.

The following members attended:—Dr. M. L. Anderson (President); Messrs. F. McMahon (Vice-President); T. Clear (Secretary), S. M. Petrie (Convener), Miss N. Brunner, Messrs. Chisholm, T. Cleary, J. A. Crammond, M. Crowley, W. Dungan, N. Devereux, T. Donovan, M. C. Flanagan, H. M. Fitzpatrick, J. Galvin, M. Hudner, P. J. Kerrigan, A. Leonard, T. McCarthy (Cahir), T. McCarthy (Athy), M. McNamara, T. McEvoy, D. Mangan, J. Maher, T. O'Neill, D. S. O'Sullivan, T. Prior, M. Swords, M. Swan and P. Verling.

Carrick-on-Suir Forest. Tuesday, 8th June.

Visit to the State forest of Carrick-on-Suir and the eastern part of Clonmel Forest on the south bank of the River Suir. Theme—treatment of young conifer stands.

The party travelled by train to Carrick-on-Suir and thence walked through woodland to Kilsheelan, where it was met by a horse-drawn brake for the return to Clonmel.

Before entering Coolnamuck wood, the President briefly addressed the party. We had occasion to congratulate ourselves on the attendance and had every reason to expect increased membership and attendance at excursions in the future. He welcomed especially those who did not belong to the State forestry service. It was a matter for great regret that more pressing business and difficulty of transport had prevented our patron, Mr. O'Deirg, Minister for Lands, from being present as he had intended.

Mr. H. M. Fitzpatrick, on behalf of the Minister for Lands, welcomed the Society on its first visit to a State forest, and hoped for many such visits. He then gave a most interesting account of the geology, soil, crop and history of Carrick-on-Suir forest.

Foreword.

The district is mainly a coniferous area with occasional stands of inferior hardwood, mainly oak. The woods and plantations lie on an outlying foothill ridge of the Comeragh Mountains, skirting the south bank of the River Suir. This ridge is formed by the hard Old Red Sandstone formation which comes between the softer Silurian rocks to the south and the more fertile Devonian and Carboniferous limestone series to the north.

Carrick-on-Suir forest comprises 1,088 acres. The acquisition of the area required seven separate transactions dating from December 1920 to March, 1938, illustrating the tedious and irregular manner in which State forests have to be built up. The Property of Coolnamuck and Churchtown which the party visited has an area of 635½ acres, of which 166½ acres consist of bought plantations, the remainder being new plantations.

Features of the Property.

The Property forms a belt some four miles long, but never more than a thousand yards wide. It lies almost entirely along the somewhat steep slope formed by the hard ridge described above. Except for

occasional pockets and strips of better soil at the foot of the slope or in the hollows, the fertility is not sufficient for hardwoods. The middle slopes are sufficiently fertile for all conifers but the upper and drier areas with a shallower soil are best suited to pines which form excellent stands of not-too-rapid growth. The elevation varies between 55 and 600 feet and over most of the area the aspect is north and shelter good.

The acquired plantations are almost all European larch and Scots pine, 31 to 35 years old. These species, with Douglas fir, predominate in the young plantations but Sitka spruce, Japanese larch and, on the poorest ground, Contorta pine, have been increasingly used of late.

Plantations laid down before Acquisition.

The first of these visited was one of pure blocks of larch and Scots pine, about 55 years old and extending to some 76 acres. This is probably the most interesting wood visited. Most species were planted at a spacing of four feet each way, the plants being supplied from a Scottish nursery. The strains appear to be excellent and the wood is now a perfect sample of a middle-aged conifer stand on true conifer soil. Estate forestry practice in the district was based on the production of pit-props for export and very little thinning was carried out. In this case no thinning was done prior to acquisition in 1927. Heavy and almost yearly thinning has been the rule since 1935 and has yielded a gross income of £2,601, not counting the many fencing stakes obtained. It was emphasized that the stand is still intact—in fact its condition is much improved since 1927, when the whole crop was much less valuable than the figure stated.

This demonstration of revenue by gradual thinning was greatly appreciated by members. It was considered a fine example of the high "expectation value" of plantations which have little measurable timber volume but are just beginning to develop into saleable material.

The soil in the larch area is a deep moist loam with slight, shallow surface podsolization. Woodrush is dominant in the ground vegetation. The pine area has a drier, shallower soil with a typical bilberry undergrowth.

A very interesting discussion arose regarding this wood; its treatment and the disposal of transmission poles which had recently been prepared and were on the ground. We were pleased to hear Dr. Anderson describe the Scots pine as probably the best middle-aged stand now remaining in the British Isles. Mr. Crammond dealt with thinning for transmission and telegraph poles and recent relaxations in their specifications. Mr. Petrie informed us that both butt-rot and canker were quite absent. Mr. Clear raised the question of future management and doubted the advisability of growing larch on a long rotation. It was generally agreed that the larch would benefit by recent heavy thinnings and that an increase in the proportion of crown to stem was to be expected. Dr. Anderson remarked on the extent of squirrel damage to pine in Scotland, where, as a result, it is almost impossible to find undamaged Scots pine stands. We have been fortunate in avoiding a serious epidemic.

Thinning Demonstration in Larch 31 to 35 Years Old.

This plantation was of special interest providing a picture of the approximate condition of the previous stand at an earlier age. The habitat conditions are almost identical. Thinning began, however, much earlier in the life of this plantation and incomplete records show a revenue of £224 from 22 acres since 1937.

Dr. Anderson marked two sample thinnings—heavy and light—in this area and workmen were at hand to fell the marked trees while the party lunched. He first gave a very clear account of the classification of trees into dominants, sub-dominants, etc., and of 'high' and 'low' thinning before giving some practical hints on carrying out the work. A discussion followed in which stress was laid on the im-

portance of early heavy thinning on the margin of plantations in order to provide a wind-firm zone.

Scots Pine, 31-35 Years Old on Richer Soil.

An example of the coarse and unsatisfactory growth of this species on better soils—in this case a fern community type—was studied. The stems were heavily branched in marked contrast to Scots pine on the bilberry type, and there was no hope of producing clean timber. It has been decided to cut out the stand, leaving good isolated stems, and to replant with hardwoods (oak and ash).

On similar soil at Churchtown, a 55-year old Scots pine-larch wood, coarse and squirrel-damaged, had been opened out to allow of ash regeneration. The ash failed to come and in discussing the treatment it was suggested that the failure was due to the scarcity of parent trees and the early formation of an impenetrable briar-bracken vegetation.

Young Plantations laid down Since Acquisition.

In these areas planted by the State the outstanding features are the changes in selection of species and the varying emphasis on particular species during the past fifteen years. In particular the widespread use of Douglas fir in the plantations now 10 to 20 years of age and the freer use of Sitka spruce in the recently planted areas were noted.

Plantations of Douglas fir, Scots pine and larch, 14 to 16 years old cover some 400 acres of the Coolnamuck Property and provide some interesting problems. The ground appears to have been originally covered by open oak scrub. The present undergrowth is mainly a mixture of heather and bilberry. Over part of the area considerable beeting was required and Japanese larch, Scots pine and a little birch were used as late as 1937. As a result growth is now very uneven and discussion turned on the treatment of coarse-growing trees of pine which had a start on their neighbours and threatened to develop into "wolf" trees. Some members favoured 'heading-back' while others thought side-pruning would meet the case. The general opinion was that the crop was too open for immediate treatment. The steady, upright, wind-firm growth of European larch set out as one-year-ones was noted.

Scots pine had been planted pure on the most exposed ground but it still retained the needles of two years. In such situations it is now usual to plant wind-breaks of Japanese larch or an admixture of 25 per cent. *Contorta* pine.

An area of 13 year-old Douglas fir was inspected which had just been 'brashed' with pruning saws at a cost of 35 shillings per acre. It was emphasized that the object of 'brashing' is to allow free movement through the plantations, not to give clean timber. It is intended to carry out a high pruning of selected stems in this plot. The absence of "wolf" trees—unusual in Douglas fir—was favourably commented on.

Amongst other points of interest was a plot of Japanese larch on ground considered fit for hardwoods. The present tendency is to exclude this species from ground which will grow any of the established, timber-producing trees; in short Japanese larch is regarded as a silvicultural, not as a timber, species.

During our visit to Carrick-on-Suir forest we were fortunate in having with us to answer many queries, Mr. T. O'Neill, the forester in charge.

Clonmel Forest

The State forest of Clonmel adjoins Carrick-on-Suir forest at its western tip. On reaching it, Mr. FitzPatrick made us familiar with its history and gave many other particulars.

Foreword.

Clonmel is the largest State forest with an area of 5,237½ acres, of which 3,774½ acres have been planted since acquisition. It is a feature of this forest that no less than 4,953 acres are held on leases. Its acquisition involved 15 separate transactions from 1922 to 1937. Fires have been a serious problem. One property has suffered from seven fires which have destroyed 375½ acres of young plantations since 1937.

Scots pine has been the main species used in initial plantations, followed by Sitka and Norway spruces, European Larch, Douglas fir and Japanese larch in that order. Smaller quantities of Corsican pine, Mountain pine and Contorta pine, oak, beech, ash, birch, Tsuga and *Abies grandis* have been used.

Gurteen Property.

This was the first area visited in Clonmel forest. It is a very large property with irregular boundaries and topography, and divided into two parts by the steep Glasha valley. A small area over Devonian rocks has a heavier, richer soil suited to hardwoods, one corner has a fertile soil over Silurian rocks well-suited to spruces and, in the better-drained parts, to larch; the main mass, however, overlies Old Red Sandstone, impoverished on the higher slopes but providing good conifer soils on the lower and middle slopes. Aspect varies considerably but seldom faces west and there is good shelter over most of the ground, always excepting the ridge tops.

Treatment of Oak Woodland.

The first area visited was that planted in 1941 and in 1943 on ground cleared of oak scrub. Scots pine, Norway and Sitka spruces were the species most used, with beech and *Tsuga heterophylla* for underplanting belts and groups of oak which had been left for shelter, soil maintenance and amenity. Over the 1941 area, a good deal of oak for fuel had been extracted after planting, with surprisingly little damage to the young trees. Excellent growth of Tsuga on old woodland soils and in deep shade of oak in full canopy is a feature of the forest.

Later we saw an area of oak scrub in the Glasha Valley, presumed to be natural, in which similar treatment preparatory to planting was beginning. Evidence of coppice origin was noticed. Scattered mature Scots pine were felled in 1940. On the high ground, the oak was genuine, stag-headed scrub and only shelter-belts were to be left, but in sheltered hollows solid blocks of good oak were to be retained to mature with the next rotation of conifers.

At the end of the second-day we examined what was easily the heaviest oak wood in this forest in the Derrinlaur property. The position is low-lying and well-sheltered and the soil is deep, moist and fertile. The most pleasing point is the absence of the thick mat of woodrush which is the great enemy of regeneration in our oak woods. In view of the large, well-developed crowns, the abundance of seedlings on the ground, the suitability of the site for hardwoods and the amenity value of the wood, it was agreed that it ought to be treated for natural regeneration. In parts an understorey of beech was already developing.

Property of Messrs. McAinsh & Co.

Before returning to Clonmel on Tuesday, we were privileged to examine an excellent stand of European larch, 26 years of age, the property of Messrs. McAinsh and Co., timber merchants. It had remained unthinned until three years ago and was drawn up but is now likely to improve. We were especially interested in occasional Sitka spruce stems in the crop which stood 10 to 15 feet above the larch canopy. There was a lively discussion as to which species would give the best financial yield. A portable saw-mill engaged in preparing fencing stakes and pit-props was also examined.

A very pleasant surprise was provided when Mr. Hamilton, representative of the owners, arrived with refreshments at a most opportune moment after a long day.

Wednesday, 9th June.

On the second day we continued our tour of Clonmel Forest, starting from Kilsheelan.

Experiment in Natural Regeneration.

The first stop was at a plot of three acres on which natural regeneration of Scots pine is being attempted. 153 stems—the best-shaped and most secure, but not the largest—were reserved at the time of felling in November, 1938, by the courtesy of Messrs. McAinsh and Co., of which about 70 have since been blown. Some seedlings were reported in December, 1941. On examining the ground the party found that there were many one-year and two-year seedlings on bare patches with some heather but that the woodrush-covered ground had few seedlings. Some birch and oak were also beginning to appear. Some doubt was expressed concerning the seed-bearing capacity of the parent trees while weevils, woodrush and bracken were also mentioned as being unfavourable factors. Dr. Anderson summarized the conditions necessary for regeneration as follows:—(1) the stand must be prepared for seed production by heavy thinning over a period of years (this one was not); (2) the final opening of the stand should coincide with a full seed year; (3) light conditions, which have an important effect on subsequent weedy growth and decomposition of the humus must be controlled until seeding is well established. In regard to the third point the importance of having a shade-bearing tree such as beech in the crop was stressed.

A comparison of methods of measuring a felled tree was made on a blown Scots pine.

During the day two examples of forest road-making were seen. Below the main nursery, a lightly metalled road which required steep banking on the lower side and the use of explosives at one part had been made. At Coolishal, the preliminary stages of laying down a road were studied. The ground was flat and the surface consisted of a mixture of peat and mineral soil to a depth of about one foot. This surface was excavated until all peat was removed, then levelled for a width of 15 feet and drains made on both sides. On the formation a sheeting of large stones will be laid and the surface finished off with small broken stones. Mr. McCarthy (Athy), suggested that the formation might be improved by placing a layer of brushwood on the soil surface.

Nurseries.

An area of 15½ acres is devoted to nursery work. It has a light easily-worked soil derived from Silurian shale and is excellent for conifers. Two methods of preparing the ground for the nursery were used. In one case the field was skim-ploughed, and the turf removed and stacked. It was then re-ploughed for lining-out of conifers. In the other case the area was green-cropped with a mixture of oats, peas and vetches, nitrochalk and kainit being applied to the soil. In the following year conifers were lined out. In the two years 1942 and 1943 approximately 7 million plants fit for planting and 5½ million seedlings fit for lining-out have been grown. When discussing seed-beds for alder it was suggested that they should be watered, and Mr. Leonard informed us that he had much better results from beds covered with soil from an alder wood—probably because some important micro-organism was thus introduced. An interesting example of delayed germination of wych elm seed sown in the previous summer was noted.

A plan for the conversion of a narrow screen of larch into a shelter-belt was explained. Heart-rot and consequent windfalls are

extensive in this strip which is known as the "Long grove." The intention is to open out the larch and introduce beech, thuja and tsuga.

Treatment of Poor Ground.

A feature of the Gurteen property is the improved results on poor soil in a wet basin at Coolishal where intensive drainage and mounding operations were carried out. The crop is mainly Scots and Contorta pines and Sitka spruce, now 10 years old. Growth is slow but promising. The main drains follow the main natural channels; the secondaries also follow the natural hollows while girdle drains were sunk round the area at the base of the surrounding slopes. Parallel turf-drains at 25 feet spacing completed the system. On high ground nearby the remains of an old crop of Scots pine apparently killed by fire was seen. The effects of exposure were still obvious and the commercial value of the stand must have been very low.

Derrinlaur Property.

This property contains a large area of high-lying poor soil on exposed gentle slopes over Old Red Sandstone. The lower slopes and the steep northern face, however, are richer and conifers do well. The only hardwood area has already been mentioned.

This "difficult" ground is representative of a very large proportion of the land offered or suggested for afforestation. The growth on this type is therefore of particular interest in view of the figures of volume production sometimes quoted and the short rotations proposed. A large area of Scots pine, 19 years old is only 3 or 4 feet high, severely checked and suffering from leaf-cast. Another tract with Sitka spruce in check was seen. High volume yields and short rotations are possible only on a small proportion of our true forest land.

The question of the economic plantability of poorer types arose. While better results are hoped for with a change-over to Contorta pine and more intensive soil-preparation, it is extremely doubtful if attractive financial returns can be obtained. Suggestions were invited for the treatment of the checked pine area. Extra drainage, the planting of Contorta belts across the wind direction, and thickening up the plantation by interplanting Contorta were suggested. It was agreed that Scots pine would not be chosen for this type of ground to-day. The possibility of soil improvement by tractor sub-soil ploughing as has been done on moorlands in Britain was also suggested, but doubts were expressed of the practicability of such a method on areas of this type.

In a sheltered hollow on good soil, a trial in planting over-size Sitka spruce plants 30 to 36 inches high was visited. The plants had put on only a few inches in height in two years.

The most extraordinary sight during the excursion was an old plantation of Scots pine on a hill top. The trees were stunted and the stems had assumed fantastic shapes; some of cork-screw growth, others growing horizontally, more having grown vertically downwards and making a complete loop at a few feet above the ground. One member aptly described this wood as a "forester's nightmare." The probable causes were thought to have been exposure, fire and deer damage in combination.

Mr. T. Prior, Head Forester in charge of Clonmel forest, kindly supplied much interesting information during our visit.

Thursday, 10th June.

On the final day two parties were formed; one to continue the tour of Clonmel Forest and the adjacent woods owned by Mr. J. Bagwell, Marlfield; the other to visit Cahir Park woods and the Cahir Estates Company's sawmill.

Marlfield Estate.

The visit to Marlfield, by kind permission of Mr. J. Bagwell, provided variety and change from the coniferous woodland on siliceous soils. Here on fertile soil on the banks of the Suir are to be found magnificent specimens of rare as well as common hardwoods. Yet the unpleasant suggestion of a collection or of exoticism is entirely absent, the arrangement and appearance of the trees harmonizing with the landscape. We had the pleasure of Mr. Bagwell's company and most informative conversation for the day.

Among the individual trees there are unusually large specimens of *Tilia cordata*, ash, single-leaved ash, Turkey oak, *Catalpa*, Beech (13 feet in girth), Tulip tree, *Populus nigra*, *P. canescens*, hornbeam (spread of 96 feet), some others of great height. Also of interest was a Cedar of Lebanon grown from seed brought back from Mt. Lebanon; some Chinese poplars from seed brought home by the late Professor Henry; and a fine line of sycamores forming an admirable screen.

An example of open self-sown woodland was seen on the steep slopes on the Waterford bank of the Suir. A Scots pine-larch plantation with beech groups and oak at the eastern end was felled in 1870-71. There now exists a thin wood of Scots pine, birch and mountain ash, with scattered oak and larch and *Rhododendron ponticum*.

On crossing over into Clonmel State forest Mr. Bagwell was cordially thanked.

Kilnamack and Russellstown Properties.

These properties again provided examples of 'difficult' types where exposure and soil impoverishment cause poor growth. Extensive fire damage occurred and the opportunity was availed of to use more accommodating species. Generally speaking, Mountain and Contorta pines replaced Scots pine on the poorest areas; Japanese larch and Scots pine were planted on the better pine areas and on some of the larch-Douglas fir ground; Sitka spruce and Norway spruce on the heavier Douglas fir ground. An adjustment of the planting limit was also made. If the new plantations warrant it, an upward re-adjustment can be made later.

Treatment of old oak woodland was similar to that practised in areas visited on the previous days.

Cahir Estates Company.

Visit to Cahir Park and sawmill by kind permission of Colonel R. B. Charteris.

Mr. Frazer, the sawmill manager, showed the party over the sawmill which is equipped to deal with timber grown in the Demesne and Estate woods. The well-appointed office was admired and the lay-out, tidiness, and fine storage room and drying sheds impressed us particularly. We were shown some fine large butts of Spanish Chestnut and elm from the Demesne and high-quality planks of elm, lime, oak, chestnut, larch, etc.

Mr. Robinson welcomed us on behalf of Colonel Charteris and showed us over the demesne and castle. One of a group of Douglas 57 years planted was 129 feet high. An exceptionally good oak-beech wood on limestone soil was noted. Elsewhere open hardwood groves have been successfully underplanted with *Thuia* and other shade-bearers. Among specimen trees were *Pinus cembra*, *Abies cephalonica*, *Abies pinsapo* and very large old oaks. A suspension bridge across the River Suir attracted much attention. It was regretted that our visit to Cahir Park had to be cut short to fit in with the railway time-table.

Discussion on the Thinning of Young Conifer Stands.

To conclude the Excursion a meeting was held in the Technical School, Clonmel.

The subject for discussion chosen was "Thinning of Young Conifer Stands." The President, Dr. M. L. Anderson, took the chair, and Mr. T. Clear opened the discussion by reading a paper on the subject the text of which is published elsewhere in the Journal.

Mr. Fitzpatrick congratulated Mr. Clear on his paper. In particular he agreed with the development of the pulp and plastics industry. On the question of "commercial thinning" he thought no danger existed in State forests.

Mr. McCarthy (Athy) considered the removal of suppressed and diseased stems justified as a hygienic measure.

Mr. McEvoy emphasised the importance of regional climate in the development of thinning technique. Practice successful in the almost snowless areas of Cork and Kerry might be disastrous in the Central Wicklow highlands. In districts with heavy snowfall early and regular thinning was to be recommended. He also called attention to the need for examining spruce crops for butt-rot before thinning.

Mr. Mangan made a plea for the simplification of "this frightening business" of Classification of tree types.

Mr. Crammond, who had considerable experience in handling spruce crops in the Slieve Bloom Mountains, dealt with the formation of raw humus. He found that very heavy thinning was effective in bringing about the decay of a two-inch layer of cast needles.

Mr. Chisholm could not agree with the view. The only hope in his opinion was to prevent the formation of the layer by early thinning. Commercial thinning or Intermittent Yield management was a 'sin' of the private owner. On the Continent under this system there was no real final crop but it prepared the way for natural seeding. He disagreed with the view that plastics helped forestry. By using 'tops' and sawdust plastics reduced the demand for timber.

Mr. McNamara, dealing with Mr. Clear's remarks on "whips" and butt rot, thought that the entry of disease might be due to the rapid growth, after thinning when the tree has room to "whip."

Mr. Clear, replying, said that a rapid destruction of saleable timber now would lead to a decline in the native timber trade after the emergency and the creation of vested interests depending on imported timber. The President summing up the discussion, joined in the congratulations to Mr. Clear on his comprehensive treatment of the subject. He added a word of warning regarding the 'Novar System' for larch. It was based on two small areas and the survival of the underplanted species was due in large measure to good water supply and soil fertility. In general side shade, not top shade, was to be aimed at. He also mentioned the danger of using the British Yield Tables as a thinning guide. These tables were based on abnormal or unthinned stands—they were in fact normal for abnormal stands. It was he thought extremely difficult for a conscientious forester to overthin. He was extremely pleased with the debate which 12 to 15 years ago would have been quite impossible.

A discussion followed as to a suitable subject for debate at the General Meeting next Spring and as to the venue for next year's Excursion.

A vote of thanks to Mr. Petrie, the Convener, who marked out the itinerary and acted as guide; to the President for the mass of useful information he had compiled; to the Secretary for correspondence; and to Mr. Prior and Mr. O'Neill who smoothed our passages through their forests, was passed with hearty acclamation. Mr. Fitzpatrick, representing the Department of Lands, was also thanked for his services during the excursion.