

THE FORESTRY REVIVAL IN EIRE

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For the last three or four hundred years, that part of Europe now known as Eire has had the unenviable distinction of occupying the lowest place in a small group of countries which have touched rock-bottom in the matter of forest area to total land surface. The three constituent countries of Great Britain; England, Scotland, and Wales, have all been more or less in much the same condition, the differences being so slight that they might almost be disregarded for practical purposes, and at the end of the seventeenth century it is probable that all parts of the British Isles were at a lower ebb as regards woodland than at any other time subsequent to the Norman Invasion. This was brought about in much the same way. Mild winters permitted continuous grazing by large herds of cattle and flocks of sheep, leading to the destruction of seedlings which should have taken the place of trees dying, falling by wind, or other causes. Only in England due to the manorial system on the one hand, and the preservation of crown forest on the other, was there any check on this movement, and the result was the existence of 5 % of that country under wood at the time referred to.

THE LAST REMNANTS OF NATIVE FOREST.

Agricultural statistics upon which any reliance can be placed do not go far enough back to enable the woodland acreage to be given for Eire in or about 1700 A.D. But probably 100,000 to 200,000 acres would not be too low, leaving out scrub and partially open ground. This acreage was chiefly covered with oak, ash and birch, the first named being cut over periodically for pipe staves, charcoal, and bark down to about 150 years ago, after which many areas under oak were left to grow on for the production of timber only. Old records show that many of the larger oak woods were leased to English merchants for a number of years, and one of the conditions was the fencing out of cattle before danger to stool shoots could occur. This was probably the first effective step taken to preserve the native woodland which still remained at that period. The distribution of this oak woodland is not very uniform at the present time, and a portion of it has been replaced by conifers or species not entirely indigenous to the country. But it is much more in evidence in the South of the country than in the North, and in hilly districts and on poorer soils than in those better suited for producing high class timber. The quality of the trees still standing had, until quite recently, a low reputation, and they were not in much demand for industrial purposes, but at the present moment anything which

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looks like wood has more or less the same value for some purpose or other.

By 1650-1700 or later the whole surface of the country had practically been given over to grantees for services of a military or political character, and these in their turn leased or let it out in the form of manors, (so called) the holdings on which were continually increasing in number proportional to the size of the population, but decreasing in size. Whatever natural forest survived at this time was unfenced, apart from that just referred to, and gradually overrun by cattle, exploited for timber and fuel, and diminished in area at a rapid rate.

THE BEGINNING OF ESTATE PLANTING.

But the bare nature of the country as a whole was quickly realized when the landlords and adventurers of the period found themselves in a position to erect mansions and settle down as residents on what looked like a permanent footing. To complete their position as landed gentry, and embellish the immediate surroundings of their seats, woods and shelter belts were necessary on a much larger scale than could be provided by natural scrub and woodland capable of being enclosed within the boundaries of the demesnes, as the land which had been cleared of small holdings was termed, and which invested the property with the necessary privacy and protection. Planting thus became an important operation in laying out this form of property, and although forestry in the ordinary sense of the term was not the primary object in view, the methods adopted in carrying out the work laid the foundation of the industry which is now beginning to receive attention as an important factor in rural economy.

The chief feature which distinguished the earliest efforts to clothe the country with trees for shelter and ornament, and which differ from ideas prevailing at the present time, was the attention paid to landscape effect from the central view point of the planter. Land was planted or left unplanted without any reference to soil qualities or economy in fencing. Labour was cheap, and much of the material required in the way of wire or ironwork which is considered essential at the moment was then dispensed with. The particular species used in forming a clump was not regarded as of much importance, but there seems to have been some preference shown for beech and other broad-leaved species which could be planted at a good size, and obtained easily from public nurseries. This was apparently the period when beech was introduced into the country, as there is no evidence that it is indigenous. Whether the object was to produce a quick effect, or to use plants likely to escape injury from ground game cannot be definitely stated, but planting trees up to ten or twelve feet in height was quite usual, and special machines were in use for lifting and transporting them. Probably

both objects had something to do with the practice in the earlier stages of the work. Boundary lines, hedgerows, and short avenues were the first to receive attention, so far as can be judged from the few examples still remaining of Spanish chestnut, sycamore, elm, and beech in these positions.

The more ambitious efforts in laying out demesnes can be traced to the popularity of "Capability Brown" as a landscape gardener in England about the end of the 18th century. One of his disciples laid out a number of demesnes in Eire on the stereotyped lines prevailing at the time, and which were probably followed during a period of 40 or 50 years without much variation, and possess one feature which might be termed the trade mark of the method. This was the marginal belt which separated the demesne from the agricultural land outside, and is probably more conspicuous in Eire than in any other country showing this form of planting.

Whether there was any serious object in view connected with the production of commercial timber when the work described above was initiated it is difficult to say. The country seems to have managed up to 1750 or so with fairly small imports of foreign softwoods for building purposes, and to have had little difficulty in making good any deficiency with home grown wood. But after about 1800 planting as a commercial proposition on the poorer soils of estates, and with little reference to landscape effect, came more into evidence. This was probably stimulated by the quick returns possible when larch was cut at an early age as pitwood for export to England, and props shipped from the Southern and Eastern ports enabled coal to be brought back as return cargoes at easy freight rates. At that time, and during most of the 19th century labour and plants were cheap and plentiful, while the financial position of most estates enabled planting to be carried on without too great a strain upon their finances. In the Statistical Reports and Surveys of Irish counties furnished to the R.D.S. about that time prices for timber appear to have been about the same as now. Probably the Napoleonic Wars were responsible for this.

But with the various Land Acts which came into operation after 1880, poor land suitable for planting passed into the hands or under the control of agricultural tenants, and landlords had few opportunities for extending the work commenced earlier in the century. The re-planting of cleared land still went on in a dilatory way on many estates, but the slowing down of the forestry operations at this period has never been renewed as a private enterprise, and it appears to have practically brought to an end the activities which had been going on for more than 200 years. Apart from the uncertainty connected with the trend of land legislation, the general drop in the prices obtained for home-grown timber, and the increasing imports of building wood, gave most estate owners the impression that their work would not be sufficiently remunerative

under the policy of free trade then being pushed to its extreme limit by successive governments with progressive tendencies. If planting did not cease entirely, therefore, it was continued more as a duty based upon tradition than as a profitable branch of estate economy.

OUR DEBT TO THE EARLY PLANTERS.

It is not necessary to go into great details connected with estate forestry in Eire as it was practised for about 150 to 200 years. The developments connected with nursery work, the fencing of the land, the choice of species, and the systems on which they were planted can all be traced without any difficulty to similar methods in Great Britain, carried out for a similar reason, but at a somewhat earlier period. It would not be correct to say that nothing was done in Eire or in Great Britain before 1650 or after 1880, but this particular period forms a convenient starting point for considering private planting in the two countries, when landscape effect was of more importance than the value of the timber produced. But the one object could not be obtained without bringing in its train a great many of those features which are now carried on by the State for quite another reason. But it is only fair to call attention to the enormous saving which the enterprise and experiments of private planters has effected by anticipating the solution of innumerable problems, which would either have necessitated many years delay, or the expenditure of large sums of public money had they been postponed until a recent period. The introduction of exotic species, the classes of soil on which they have proved successful, and the commercial value of their timber have all been investigated during the last 100 years or more on a sufficiently wide scale to supply the modern planter with information of the greatest value, and without which he would be working on very uncertain lines to-day. If the State Forest policy now being adopted recognises its obligation in this connection, it merely pays back a debt which has been owing to several generations of private owners. But the greatest value of these woods has been found in the functions they performed as timber reserves during the partial or total cessation of imports during the two periods of 1914-1918, and that of the timber crisis through which the country has been going since 1939, and which has not yet terminated. This anticipation of present day conditions may be excused at this particular point, but one almost trembles to think of what the position in Eire would have been without the private planter of 50 to 100 years or more ago.

Outside demesnes little planting was done until the famine period of 1845 to 1850, when all forms of rural work were put in hand to the greatest possible extent. For these plantings conifers were chiefly used, Scots pine, larch, and spruce forming the bulk of the species on the hillsides and poorer types of soil devoted to this work, which seems to have been the last big scale operation of its

kind which took place on private property. After this period little happened in connection with estate woods to alter their condition, until the big storm of February, 1903 which devastated many areas across the centre of Eire, but seems to have spared the North and South of the country. The effect of this storm can still be seen on many estates in the shape of semi-waste ground, covered with brambles, bracken, birch, scrub, etc. and scattered patches or single trees remaining over from the old crop, which often had to be practically given away to get it off the ground.

THE HOWITZ REPORT AND KNOCKBOY.

So far conditions have been referred to which belong to a day which is past and gone, and had little to do with present day policy. But there is no doubt that estate forestry laid the foundation of practices which have not greatly altered during two or three centuries so far as essentials are concerned, or at least not altered them much for the better. But between 1880 and 1900 while little development of a practical nature in Irish forestry occurred, important changes in the general outlook as regards public opinion on rural affairs were taking place. A committee was set up in 1885 to enquire into Irish Industries, and amongst other matters forestry came under its view as one of those industries which imaginative persons considered eminently suitable for extracting wealth from waste material, of which unlimited quantities were supposed to exist in the country. One form of material in the minds of some was the area of poor land covered by bog, heather, bracken and other vegetation which could not be brought under the head of crops or pasture in the agricultural returns of the period, and was usually described as "mountain and heath" land. The committee referred to had witnesses before them of various denominations, all or most of whom appeared to take the view that the whole of this mountain land could produce timber; that it had no value at the time whatever; and could be acquired without asking for it, while its extent corresponded to a somewhat imaginative acreage which had never been clearly ascertained. As regards the last point, the principle followed by enumerators seems to have been similar to that adopted by Sir William Petty when making his forfeited estates maps in or about 1655, "when the various categories of occupied land don't fill up the barony or county in question put in a forest, mountain, or bog." The largest area of waste land recommended for planting by witnesses before the committee was given by a Mr. Howitz, a Danish gentleman who appears to have read a paper at the Fisheries Exhibition being held in London about that time. His estimate was 4,000,000 acres, and when asked how he had arrived at that figure stated that "he saw what he did and was told that the rest was similar." The same witness thought that flax should be grown on the hillsides and mountains as a preparatory

crop for timber plantation, and also recommended that half a million acres should be devoted to a shelter belt along the west coast to keep out Atlantic gales. Water courses he thought could serve as natural fences against stock, and all the river banks from the Bann to the Blackwater should be planted to stop flooding throughout the country. As the evidence given by this witness occupies forty pages of the committee's minutes, it may be assumed that his ideas were taken seriously, and it might be useful or at any rate interesting to give his qualifications as an authority on forestry in Ireland. Mr. Howitz described himself as a Danish forestry commissioner, and stated that he had been a Superintendent of forestry in Australia. He had also made a report on Ireland as a possible forest area in 1884, and it appeared that he had in some way buttonholed Mr. W. E. Gladstone in London, by whom he was requested to carry out this task. In that report the area of waste land was given as 5,000,000 acres, but this "trifling" discrepancy may be disregarded. A list of trees recommended by him for planting would be considered fairly complete in a nurseryman's catalogue, and possibly 10 *per cent.* of them might have survived for a few years.

No doubt Mr. Howitz was a respectable man in his own sphere of life, but to regard him as an authority on Irish conditions in general, and on forestry in particular seems bordering on the ludicrous. Yet this illustrates in a manner the knowledge existent in the country on this particular subject, and explains the difficulty responsible Departments and officials had in successfully opposing any wild-cat scheme put forward by well-meaning enthusiasts without practical experience. A good illustration of this can be found in connection with Knockboy. The true history of this scheme has been long forgotten by, if it was ever known to, the present generation of tree planters, but it may be described in a few words. When Mr. A. J. Balfour was chief secretary he was urged by some deputation to start afforestation on the waste land of the West of Ireland. As might be expected, his answer was in the negative. But it is said that he promised to put a scheme into operation if anyone could show him where land free from grazing rights could be obtained. Mr. Balfour was caught out. About 1,000 acres of the finest snipe bog in Connemara was brought to his notice, and as for grazing rights "Shure, didn't Mick O'Flaherty's ass die of hunger on him ten years ago on that same land and who'd be lookin' for grazing rights after that." The Agricultural Branch of the Irish Land Commission, later to become the Congested Districts Board, (better known in the West as the "Congisted Boord,") was given the task of dealing with the matter, and after considerable efforts to be relieved of the work altogether commenced spending about £10,000 in 1891. About eight or nine years were spent in trying to get trees to grow, and after about 3,000,000 had been planted, comprising some 25 species, the undertaking was given up as

hopeless. In this way State Forestry was initiated in Ireland. Before the experiment was wound up two forestry experts were brought over to pass an opinion on the subject. One was a German with experience in India, the other a Scotsman. The former thought depth of bog was the cause of the failure, the latter thought a good deal but said little, but there appears to have been no attempt to obtain the opinion of many men in the country who could have said straight off that the attempt was hopeless from the start. It was the old story about prophets in their own country.

ESTABLISHMENT OF FORESTRY SCHOOL.

The events just recorded might be described as the final stage of an era of propaganda lasting about 20 years, and running through it without much variation was the plaint that two to three million acres were lying idle, and waiting for the planter's attention, and to make a start with anything less would be trifling with the matter. The magnitude of the schemes advocated effectually prevented anything being done, for while deputations to the Chief Secretary at the time being became annual events, and questions in the British House of Commons were always springing up at appropriate intervals, the reply was always the same, "No funds available at the moment." Had the policy of the thin end of the wedge been adopted, an earlier start might have been made in some way by the Land Commission throughout the country in general, in connection with the acquisition and breaking up of encumbered estates, but many years were lost through the neglect of this step being taken, and it was not until the Irish Forestry Society was brought into existence by Dr. Cooper in 1900 that the question had to be seriously considered by the Government. This Society was made up of a few landowners and others interested in the subject, but its membership was never large and it finally wound up after ten or twelve years of existence. What it did do, however, was to come into existence at a psychological moment when rural economics were being widely discussed by a few leading men in the country, prominent among whom was Sir Horace Plunkett, who in the course of two or three years, succeeded in setting up the Department of Agriculture and Technical Instruction for Ireland in 1900. Amongst the various activities this Department was supposed to foster out of an Endowment Fund which brought in about £100,000 per annum, forestry was one and the Society referred to above made the most of it. In a manner of speaking its policy was to sit upon the Department's doorstep and give that body no rest until something practical was accomplished. Unfortunately the experience hitherto possessed by Government Departments in this country was not favourable to land purchase, which was one of the preliminaries required before any operations connected with forestry could be started. The policy at that time was to delay the evil day as long as possible, but the importunities

of the Society referred to would not admit complete inattention to the subject, and to stave off its demands a few enquiries were set on foot regarding land throughout the country with the idea of starting a school for working foresters at some suitable spot. Eventually Avondale in County Wicklow, which was in the market at the time, was purchased for that purpose. This was about as far as the Department was prepared to go with its own funds as so many demands were made on the latter that it was impossible to launch out into any big scheme of the nature demanded. The writer of this article was brought in to lay out some sort of a demonstration area which would serve the purpose required for training men. From now on the personal aspect of the subject rather vitiates the narrative and the views expressed must be judged from that angle.

Avondale Demesne, as most readers of this Journal know, consists of a rather long, narrow strip of land lying parallel to the river Avonmore in Co. Wicklow, and is about 120 acres in extent. In 1904, the date of its purchase, this demesne consisted of about 60 or 70 acres of grassland, and 50 acres of scrub or old woodland from which most of the timber had been cut when the previous owner, Charles Stewart Parnell, was in occupation. The heads of the staff under which the enterprise would in future be administered had no particular ideas as to the form this property would ultimately take, and to begin with it was even contemplated using part of it for an agricultural station, numbers of which were then springing up in various parts of the country. However, this idea was fortunately abandoned after brief consideration, but one point was insisted upon at the outset. This was that the work should be practically completed in one year, otherwise it was feared that political influences would come into play and compromise things all round. This time limit would have been simple enough if any of the common species, like larch, spruce, or Scots pine had alone been used, but with a small area of a little over 100 acres it did not seem particularly useful to form an ordinary plantation of this kind as a demonstration of various types of woodland which would ultimately come into existence in different parts of the country. The "forest garden" suggested itself as a more appropriate form of demonstration, using all species at all likely to thrive in the Irish climate in small plots of an acre or so, and mixing these with the ordinary trees which could be used as "fillers" or nurseries. Obtaining these various species in a short time was no easy matter. Nurseries in Great Britain, France, Germany, etc., had to be drawn upon, but the number of plants found available was limited to two or three hundred in many cases, and their age and size were not always suitable for the purpose. However, most of the work was got through in the first winter, although much remained to be done for several years later. Owing to the hurried nature of the work the results turned out not altogether as they might have done had more

time been allowed, while as regards species both negative and positive results were more or less anticipated. The tests initiated with regard to the latter have not yet enabled definite conclusions to be reached, while spring frost, snow blizzards, wind, and other minor troubles have affected the development of many.

THE DEPARTMENTAL COMMITTEE IN IRISH FORESTRY.

When the financial position of the Department became more critical in this particular respect, it was decided to set up a Committee to investigate the whole problem of State afforestation from an independent point of view. Generalities had gone far enough to establish the fact that one and a half *per cent.* of woodland over the entire surface of the country was not sufficient to give it that finished appearance which had been acquired by the equally civilized countries of Europe, and the various forms of propaganda were having their effect at last upon public opinion.

The Departmental Committee on Irish Forestry was set up in 1908 under the Chairmanship of Mr. T. P. Gill, whose literary ability and experience in Parliamentary procedure and press matters were of great value in carrying out the duties involved. Witnesses of all shades and various occupations were given full opportunity to express their opinions, while the various theories which had been evolved during the previous 100 years were not lost sight of. If everyone was not absolutely unanimous as regards the findings of the Committee as set out in their Report, it was generally agreed that a good case had been made out for something substantial to be done. Two points in this Report may be briefly dealt with. One was the proposal to purchase, within a period of ten years, 300,000 acres of hill land, and to plant 200,000 acres of this in forty years. This figure as regards acreage was not based on any exact data, but it was assumed that 10% of the total mountain land in the country could be found in the shape of fairly large blocks and could be acquired without interfering with the hill farmer and grazier, whose interests in all previous estimates had been entirely ignored. As regards the rate of purchase and planting there is no doubt that this was the estimate of the chairman, and the writer had nothing to do with it. It was far too rapid in both directions, and would have involved setting up special machinery for letting the unplanted land for a number of years. This would have brought in its train all manner of complications, as everyone acquainted with Irish land occupation can understand.

The first result of the Committee's report was an annual grant from the British Treasury of £6,000 to acquire woods which were gradually coming into the hands of the Land Commission, and could not permanently be retained by them. The next step of any importance came when the Development Commission for the financing of various enterprises in Great Britain and Ireland came

into existence. The Department was the first to take advantage of this Commission's powers by making an application for a substantial grant, and the final result of various arguments and correspondence was to obtain one of £25,000 as a preliminary instalment. This grant was made on the recommendation of a small committee of investigation set up by the Commission, and which consisted as regards Ireland, of an ex-Indian forest official, a retired Irish timber importer, and a Welsh farmer, a trio beyond reproach, but not particularly conversant with Irish rural conditions. In any case they recommended the financing of three areas of 5,000 acres each in Wicklow, Queen's County, and Cork, and as time went on there is no doubt other blocks would have been brought in and supported by the Commission. Before this benevolent scheme could be carried out however, the first world war came along, and everything of a financial nature was suspended pending what might be termed "alterations and disrepairs" to the world in general!

THE FIRST WORLD WAR AND ITS EFFECTS.

From 1914 to 1921, a period of six years, State forestry in Eire was in a state of comparatively suspended animation. Planting was cut down to a minimum, and only the most urgent work connected with maintenance received any financial support from public funds. Activities at this time were connected with the cutting and conversion of home-grown timber for war purposes, and under the Timber Supply Department of the Board of Trade saw-milling operations were conducted on private estates, and round timber and pit props purchased for export in the round. The two or three last years of this period were, of course, affected by civil disorders rather than the European war, but the effects were exactly the same in both cases. The general result of the disturbances, both international and local, resulted in about 30,000 acres in Eire being either cleared or rendered little better than scrub. Young plantations also suffered greatly from lack of attention and thinning, although other damages, apart from theft and trespass in the unsettled parts of the country, were not particularly noticeable.

But if the European war brought about big losses in the area of stocked woodlands in Eire, these losses were still greater in Great Britain, and before the end of hostilities measures for repairing the damage were being considered by the British Government. These measures were to have a more permanent result than most people imagined. In 1916 to 1917 an Interim forestry committee was set up to act as a sort of advance guard to a more influential body which succeeded it. These two committees, representing the United Kingdom at that time, examined the losses which had been sustained and the best means of redeeming them by both private and state action. An area of one and threequarter million acres was recommended as an addition to the existing woodland area, and the

necessary funds were eventually provided by the Government. Ireland came under this scheme, and was treated in exactly the same way as England, Scotland, or Wales between 1919 and 1921. But the Commission had scarcely started this work, before what was known as the Free State came into existence, and another change-over took place in the administration of Forestry operations in the twenty-six counties. This again reverted to the Department of Agriculture, and a new organisation had practically to be framed.

The above events and administrative changes may have been beneficial in various directions, but they did not prove particularly favourable to State Forestry in general. Every change over meant delays, interference, and uncertainty regarding executive work of various kinds, and of more significance still was the attitude of the administrative bodies or heads to various matters of policy. It was difficult to get any definite ideas, for instance, as to whether this policy was to go fast or to go slow, and there was always the uncertainty, when a doubtful decision had to be made, about the corns likely to be trodden on and the feet they belonged to. Matters of small importance in the abstract often assumed large dimensions when land was touched in which some particular person was interested, or some right or privilege demanded which was not in the interest of the executive to grant. Ground was often cut from under the feet of officials in more ways than one, and many decisions were reversed which reacted on work already carried out or in contemplation.

THE FORESTRY ACT OF 1928.

After 1921 few changes of an administrative nature were made until the passing of the Irish Forestry Act of 1928, which vested certain powers in the Department for the restriction of felling timber on private estates, and the imposition of replanting to replace it. This enabled a general review of the situation from year to year as regards felling and planting, and gave the Minister in charge an opportunity to step in when land and timber were being sold for the obvious purpose of what might be termed devastation. Other clauses were intended to check abuses which are fairly well known. The Act of 1946 was based upon the previous one, and did not materially differ from it.

Another change which the writer advocated but which was not carried out in his time was the transfer of the Forestry Division to the Land Commission. For reasons which need not be gone into, agriculture and forestry in most countries are not twin brothers with a joint interest, but rival claimants for the same estate, and this applies to government departments set up to further the interest of the two industries. One blade of grass is considered of more value in the one case than a ton of timber in the other, and the balance is always weighted in favour of the former when questions of area or

expenditure of State money come into the matter on the agricultural side. An agricultural department enters life with a conviction that flocks, herds, and food crops are the main objects for which the earth came into existence, and the fact that the forest can claim priority by many thousands of years is always ignored or lost sight of. This outlook on the matter has a prejudicial effect when the one authority attempts to maintain a fair balance between its two branches, and it is better not to put them under the same ministerial wing.

THE FRUITS OF STATE INTERVENTION.

The above brief sketch of events traces the artificial development of forestry in Eire since the country assumed its present appearance and economic condition at the beginning of the 18th century. It may now be asked what has been achieved in the course of nearly forty years of direct State action, during which private enterprise has been more or less suspended. In 1900, when this phase began, it is fairly correct to say that Eire possessed no State woodland apart from a few acres in the hands of the Land Commission and held by that body on a temporary footing, and Knockboy had passed out by then. The first acquisition by the Department of Agriculture for the definite object of forestry development was in 1904, when a small area was acquired in Co. Wicklow for the purpose referred to already. Between 1904 and 1908, surveys, investigations, committees and other preliminaries occupied most of the time, and this period may be eliminated from the calculation. Taking the latter up to 1943 a year in which returns were most readily available, the total area of woods in the hands of private owners and the State as given by the Department of Industry and Commerce was 282,888 acres. Compared with the approximate area taken into the Irish Free State in 1921 and which may be put at 250,000 out of a total of 300,000 acres for the entire country, it would appear that 33,000 acres were added by both classes of ownership. The total area of ground said to have been planted on bare land by the State alone in the 39 years was 65,514 acres or about 2,000 acres per annum on the average. Under the head of total State woodland 110,000 acres are included in a total of 136,576 acres of productive land. Of this area 25,000 acres consisted of plantations, and 25,000 acres of cleared woodland purchased from private estates, both of which areas must have been included in 1921. How many of the 33,000 acres added since 1921 consist of mountain land, and how many of the demesne land usually classed as agricultural cannot be given from the Abstract, but the proportion of unplanted land to the total acquired suggests that more than half of it came into the latter class. During the 25 years occupied in *actual* operations, therefore, the acreage planted works out at 2,600 per annum.

Compared with the Committee's programme drawn up in 1908, only about one-fifth of the increase suggested has been added to the woodland area appropriate for Eire alone, but most of the deficit is due to the earlier years when adequate machinery had not been provided. Acquisition, however, has made better progress, for which Land Commission co-operation has probably to be thanked. But compared with the extravagant estimates made previous to 1900 it can be easily demonstrated that the increase in Eire's woodland must take place much more slowly than enthusiasts have advocated on purely imaginary grounds. If the 5 *per cent.* of woodland to total area is ever to be obtained, it will have to be effected by the State, and the land must be derived from one or the other or both of two sources, a larger proportion of mountain, or the absorption into the planting scheme of about 400,000 acres of agricultural holdings and unplanted portions of good land in demesnes taken over by the Land Commission.

After 25 normal years of work under various administrative systems, and in a period which certainly dragged along slowly to begin with, but is probably moving more rapidly to-day by virtue of several factors of a political, administrative, and financial nature not dreamt of in the philosophy of the past, four-fifths of the road have yet to be travelled. But it must be noted that the full programme of 1908 reckoned on the active co-operation of private landowners, and this has not been forthcoming. This has altered the whole aspect of the problem. Regarding Eire as an agricultural country, almost pure and simple, a smaller programme may have to be kept in view, and the acquisition of existing woods prove its main feature. This appears to be the tendency at present.

THE GROWTH OF SILVICULTURAL KNOWLEDGE.

So far nothing has been attempted beyond a brief summary of facts and figures relating to forestry revival in connection with acreage. But area or volume is not the entire essence of the problem. If State forestry is to fulfil its ideal function, it must not only produce adequate quantities of commercial timber per acre, but also timber of a quality which the merchant and builder require. One of these essentials depends upon species and soils, and the other upon silvicultural methods. The soil cannot be controlled or materially altered by the forester as is often possible in farming or gardening, and it has to be taken or left as opportunities occur. Species have been limited, after two or three centuries of experiment by private planters, to about a dozen, but those which are in favour with one generation of planters do not necessarily retain their popularity indefinitely, and it is often difficult to ascertain the cause. Going back for a century or two one can note the confidence placed in species like Weymouth Pine and silver fir, neither of which have a place in any planting operation to-day. The former was given up on

account of the "blister rust," the latter owing to its liability to *die back* after 10 to 20 years, presumably owing to attacks of *Adelges Nusslini*. The silver fir, as individual groups or specimens, still towers above all other trees of the same age on the most exposed sites, and many contain 400 to 500 cubic feet of timber. One cannot visualise any change of climate during the last 200 years or so which can account for the trees originally planted succeeding as they did, and their successors invariably fading away after an apparently healthy start. So far as any evidence goes at present *Adelges* may just as easily be the result of this failure as the cause of it. To give an example of what is possible where the conditions are favourable, the case of Derreen, in County Kerry, may be quoted. This estate was visited by the writer in August, 1892, and the plantations reported on for the fifth Marquis of Lansdowne. Most of the young woods were then from 10 to 20 years of age, and amongst the species planted were a large number of silver firs all over the estate, but more especially round the edges of Glanmore Lake. The growth which has been made by this species in the course of 60 or 70 years may be judged by the volume of some individuals measured in 1945. The cubic feet in these trees were estimated respectively as 250, 200, 180, 160, and 114, and the volume per acre based on small sample plots worked out at 8,000 to 10,000 cubic feet. Another species which might be mentioned and which has been introduced during the last 20 years as a forest tree is *Pinus contorta*. Seed was obtained from Raftn of Copenhagen about 1921 or 1922, but its value for use on poor soils was not clearly recognised until later. Its rapid growth on ordinary ground had already been noticed in seed beds of Douglas fir, in which the pine had obviously arisen from stray seeds accidentally mixed in the main consignment. Nothing can be said at present of its timber qualities, but it is beyond doubt capable of growing where the most hardy tree hitherto known has proved a failure. These examples are quoted to show what may occur both with well-known species in Europe, and more recently introduced ones from the extreme west of North America. Other examples show that it is impossible to foresee the result of planting any exotic tree, and if we refrained from doing so we should lose larch, Sitka spruce, Douglas fir, Spanish chestnut, sycamore, etc. and, so far as Eire is concerned, beech would have to be regarded with suspicion.

On the silvicultural side experience has proved over and over again that even-aged crops are the most profitable from an all round point of view. Uneven-aged woods, resulting from interplanting, under-planting, or natural regeneration may look much better from an aesthetic point of view, but the difficulty with rabbits and hares, the lack of intensive sunlight, and other drawbacks not always anticipated, such as the extraction of mature timber without damage to the younger trees, discounts a good deal of the theoretical value of these systems. On bare ground, of course, even-aged woods must

be the fore-runners of any system, but sooner or later modifications have to be introduced, and nothing is more profitable, or can be more easily carried out than even-aged clumps, varying with the nature of the soil and other factors. A little acquaintance with most estate woods demonstrates that this system is already in operation, and proves quite successful in breaking up the monotony associated with large areas of the same age. The demarcation of these clumps requires careful consideration and judgment, and finality is not always desirable.

Attempts to render natural regeneration a standard silvicultural system in Great Britain and Ireland have not been particularly successful, except perhaps in the beech woods of Buckinghamshire, and Scots pine here and there on gravelly soils. Numerous patches of self sown seedlings can be found associated with many trees, both indigenous and exotic, but with a Hare's Protection Order in operation, anticipations as regards the results may not always be realised.

THE WOOD CRISIS.

During the last two or three years conditions relating to fuel have introduced a new element into Eire's forestry problem, which may have far-reaching effects on silvicultural systems. The necessity for firewood throughout the country as a substitute for, or supplement to turf has assumed formidable dimensions, and there is no immediate prospect of the situation altering for the next four or five years, or ceasing to be a permanent drain on the country's attenuated supplies of timber. How can such a drain be met? The old ash, beech, oak and sycamore standing in demesnes and hedgerows are at present sustaining the bulk of the attack, but this cannot go on indefinitely. Sooner or later other classes of timber will be called upon, and this has already been intensified by demands for building and construction work to replace the supplies formerly imported from Northern Europe and Canada. Possibly the winter of 1946/1947 has been a record as regards firewood demands, following as it did, a wet summer and autumn which interfered with turf supplies. Whether conditions of a similar degree of hardship for all parties concerned will recur for many years to come or not, it is fairly safe to predict that both public and private stocks of timber will have to be drawn upon in future to a greater extent than was anticipated 10 or 12 years ago. The question is how long will these stocks last without creating another shortage in commercial timber, which is acute enough already. It is fairly clear that the forest authority of the future must be ready to meet demands for fuel on some organised basis. If a suggestion may be of any value, it is that the natural oak woods still left, and capable of cultural treatment, should be restored to a coppiced condition on a fairly long rotation, and the old English system of retaining standards of the most promising trees

at each felling resorted to. Oak, ash, larch, and one or two other trees fit in with this system without any complications. The alternative appears to be the use of thinnings from coniferous woods, which would not be particularly popular amongst ordinary householders. Hayes, the author of *Planting*, had something to say about the oak coppice of his day, and believed the retention of standards was part of the system down to about 1750 or so, but gives no definite evidence to support his opinion. It is doubtful if it was ever general throughout the country, although a few owners here and there may have adopted it.

Another reserve of a different character and which can only be regarded as temporary, is the broad-leaved timber standing on small patches of the demesnes now being acquired. This reserve would serve a double purpose, retain for a few more years the trees of beech, ash, and other broad-leaved species which will soon cease to exist on many sites, and in the meantime enable them to be drawn on when urgently required. Their retention would break up the woodland scenery sufficiently to relieve the monotony now becoming apparent in thickly planted districts.

Whether Eire ultimately requires 700 or 800 thousand acres of woodland or not, it is evident that a continuance of the present forest policy will render her independent of all but a small proportion of the imports from abroad, which in a normal year do not exceed 300 to 400 thousand loads, and these should easily be supplied by a similar number of acres of plantation on good timber producing ground.

To those who have to solve the problems, and carry on the legacy imposed by previous generations, the writer of this article may conclude with the word "Sláinte."