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HISTORY

OF

LLANTRISANT

FOREST

S(W) CONSERVANCY

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F O R E S T R Y C O M M I S S I O N

H I S T O R Y

of

LLANTRISANT FOREST

1921 - 1951

SOUTH (WALES) CONSERVANCY

HISTORY OF LLANTRISANT FOREST

HISTORY of LLANTRISANT FOREST

CHAIRMAN'S COMMENTS

I undoubtedly inspected the South Wales forests (including Llantrisant) before the first visit (of 1929) recorded in the Conservancy statement. Unfortunately there are no reports of them on the Headquarters file. I must therefore write from memory.

As a whole our early plantations at Llantrisant were not successful. We had no real experience of the problems involved and the immediate reaction was to attribute failures and slow growth to smoke and fumes. Douglas fir, and to a lesser degree European larch were then regarded as very susceptible to those deleterious influences, Sitka spruce more resistant than Norway spruce, and Corsican pine more resistant than Scots pine. I hardly think that we had very precise ideas at first as to the status of Japanese larch. On those bases we started off with far too much Douglas. There were, however, obvious contributory causes such as neglected weeding and trespass. It is to be assumed also that planting was not well done.

It has become clearer, as the experience at Llantrisant and elsewhere accumulated, that smoke and fumes were not the chief factors. I will refer at a later date to this subject as a whole.

The early problem following the too rapid planting of Llantrisant and the extensive use of Douglas fir, was what to do about the unsatisfactory sections. Beating up was obviously necessary and, rightly or wrongly, a good deal of Sitka spruce was used in beating up. It had been very difficult to decide whether to accept much of the Douglas, or to neglect it and replant. My own view was that by beating up and getting a canopy, the Douglas would respond and do moderately well. That view seems in the long run to have been correct, but I did not know then, as I do now, that the beating-up plant should be

a pioneer species and that the pines (especially on heather ground) or Japanese larch (on other types) were the best choices. Alternatively if we had started off on sheltered ground with a mixed Douglas/pioneer-species crop, we should have secured satisfactory results from the beginning. In saying that I am not recommending extensive use of Douglas under Llantrisant conditions.

The Conservancy Report seems to recognize a difference between Oregon Douglas and green Douglas. I don't know what basis exists for so doing. The intermediate variety, caesia, was widely distributed about the middle 1920's and has done well in places as it is immune to Chermes. So far as I know, no blue Douglas were ever planted at Llantrisant. On the other hand, only the green Douglas escapes Rhabdocline, which can be far more dangerous than Chermes.

Beech began to show promise at Llantrisant as soon as some shelter was provided by the adjacent conifers. In suitable mixtures it should do reasonably well.

A point about which I have some anxiety is the tendency to plant and replant Japanese larch on the same ground. It may be all right, but we must remember that Japanese larch is a shallow rooting species, and that, from its exceptional production, it may be expected to make considerable demands on the soil. It would be safest to regard it as a pioneer crop only for the first rotation and work on the assumption that in due course it will be replaced, at least as a pure crop, by other species. This calls into consideration the question of underplanting which in itself requires overhauling in the light of experience. It is certainly a subject for research.

(initialled) R.

Jan. 1951.

HISTORY OF LLANTRISANT FOREST

GENERAL DESCRIPTION OF THE FOREST

Origin of Forest

Llantrisant Forest is held under a 999 year lease from the Estate of the Marquis of Bute. The lease dates from the 2nd day of February, 1921. The area originally acquired was 609 acres, but in 1922 7.5 acres were resumed by the Estate for mining purposes, so that the area now held under lease is 601.5 acres.

Name

The forest derives its name from the village of Llantrisant which lies three quarters of a mile away to the east. The name Llantrisant, literally translated, means "Church of the Three Saints".

Description of the Area at time of Acquisition

The forest area occupies the summit, eastern and northern slopes of Mynydd Garth Maelwg. The land rises from 200 ft. above sea level, along the Ely river in the north-east and to 881 ft. above sea level in the south-west. There is a fair degree of exposure to the south-west winds on the south-west margin. Most of the area was covered by mixed hardwoods and small plantations of conifers until the 1914-18 war during which extensive felling operations took place. When the Forestry Commission operations started, only scattered remnants of the original crop remained, but small new plantations of conifer had been established on some parts of the area. The standing woodlands were described in a report by Acquisitions Officer W.H. Lovegrove and a summary of his report is given here. The report was prepared at the instruction of Assistant Commissioner Murray.

Plantations standing at 7.11.20

(a) 11.7 acres of 20 year old Japanese larch and European larch

(b) 8.1 acres of 2 year old Japanese larch

(c) 2.75 acres of 2 year old poplar - in all there had been 5.5 acres of poplar, but 2.75 acres were blank at the time of the report.

The two year old plantations had been created by the Bute Estate and, with the exception of the blanks in the poplar, were in good order and could be accepted as established.

The 8.1 acres of Japanese larch were planted at 4 ft. x 4 ft. and are now recorded as 5.0 acres of P.19 Japanese larch in Compartment I of the forest.

The poplar, which was Black Italian, was planted 4 ft. x 3 ft. on the lower wetter ground, and only a small number now remain as scattered individuals in the matrix of the new crop. This area is now covered by Japanese larch planted in F.Y.23.

The 20 year old crop of mixed Japanese and European larches had some Norway spruce and hardwoods scattered among it. This crop was felled during the early part of the 1939-45 war, but no records of the productivity or condition of the crop are available. This area is now under a pure crop of P.41 Japanese larch.

It is interesting to record that the assessed value of the standing plantations in 1920 was £400.

A small area of the ground acquired was covered by bracken. This area lay to the south-west but its exact extent is unknown.

Thus at the time of the commencement of Forestry Commission operations the land could be classed into three broad categories as follows :-

(i) Felled woodland - now with fairly heavy coppice growth

(ii) Standing plantations - 2 year and 20 years old

(iii) Bracken slopes

Geology and Soil

The underlying rocks are mainly the Pennant Grits of the Coal Measures. The grit is well fissured giving adequate drainage. Generally the soil is light gravelly loam, but there are localised areas of boulder clay and peat. The configuration of the area leads to a high degree of natural drainage. This has been much assisted by the presence of extensive mine workings under the area.

Risks

(a) Insects

During the life of the forest, several insects have been identified with their own peculiar damage to trees. Neomyzaphis has been responsible for a great deal of defoliation on Sitka spruce, and has doubtless retarded growth considerably. Similarly, Adelges cooleyi has much retarded the advance of Douglas fir plantations, although it is generally felt

that attack by this pest has followed a decline in general condition of the crop. The high mortality from Honey Fungus in Sitka spruce plantations may well also be due to the original weakening by frost, bad drainage, and Neomyzaphis. If the all round condition of the Sitka can be improved, it should be able to resist these influences. The greatest danger which has occurred in the forest, however, was the advent of Ips sexdentatus in F.Y.47. In F.Y.48 in both Corsican pine and Scots pine, groups of two and three trees were found to be heavily attacked by the beetle. The infected trees were removed and burnt and billet traps put down. These vigorous control methods were well enough applied to prevent any spread of the pest. Present Working Plan prescriptions include the confining of thinning operations in pine plantations to the winter months wherever possible. Where summer felling of pine takes place, every effort is made to extract the produce from the plantations immediately.

(b) Ice

In this section mention can be again made of the damage caused by the ice storm of 1939-40. During this freak spell, many of the trees were sheathed in ice to a thickness estimated at 4 in. or more in some cases. Damage was particularly severe on the south-west margin, and on the lower slopes above the main road. A great number of leaders were knocked out altogether, and the result has been a high proportion of "forked" or "kinked" trees. In the former cases, two of the lateral buds have carried up equal shoots, while in the latter cases one dominant lateral bud has sent up a shoot in place of the original leader. Although the proportion of trees so damaged was as high as 10% - 15% in some plantations the effect of two subsequent thinnings has been enough to remove all but occasional signs of the damage, and a satisfactory final crop will still be achieved. The value of the material from the two thinnings was, however, considerably lessened as a result of greater conversion losses.

(c) Fire

Fire incidence at the forest has not been great, and the greatest source of danger lay along the east and north-east boundaries where the Penygraig Branch Line of the Great Western Railway, as it was then, caused two major fires in F.Y.29. Altogether 10 acres were destroyed and these were replanted in F.Y.30 with Japanese larch and Sitka spruce. Other fires

were in Compartments 14 and 15 and could not be attributed to the railway. Despite the fact that the forest is now largely in the thinning stage, and has been brashed in most areas, the fire danger from the railway remains. Traffic on the line is predominantly of goods trains and the severe incline causes engines to emit a great number of sparks. Boundary fires are fairly common even now and great vigilance will be required to prevent the occurrence of a crown fire. The use of Japanese larch on these areas in future plantings must be a matter of priority.

SILVICULTURE

Extent of Planting and Use of Species

The first planting operation at the forest was the creation of amenity margins of beech. These were generally of two rows width and bordered the main road through the forest and one or two of the main rides. For this planting 2 year beech seedlings from the New Forest were used. In F.Y.21 the main planting was as follows :-

Japanese larch	18.0 acres
Douglas fir	19.0 acres
Norway spruce/Sitka spruce.	13.0 acres

The Douglas fir used in this year was of the Oregon variety and was not successful. It has been subsequently beaten up with Sitka spruce and Norway spruce to an extent which now necessitates that the areas be managed as mixed crops. In one small area the Douglas fir was beaten up with Scots pine.

In F.Y.22 the most extensive planting was of Oregon Douglas fir, and 85 acres of this species were planted. Greater use was made of Norway spruce, particularly on the eastern and southern slopes, and 36 acres of the species were planted. 12.5 acres of Corsican pine were planted on the southern margin and 15.5 acres of mixed Corsican pine and Scots pine in the same region. 12.0 acres were planted with Sitka spruce and on 2 acres a mixture of Scots pine and beech was planted. A small area of 1.5 acres alongside the main road was planted with European larch, but it is of note that the plants used were culls of a very low standard. When using the fate of European larch at Llantrisant as evidence at the trial of the species in South Wales Coalfield areas, it will be well to remember this salient fact.

The Douglas fir plantations of this year were again unsuccessful, and had to be extensively beaten up in subsequent years with a variety of species. The resultant plantations are chiefly Douglas fir/Sitka spruce and Douglas fir/Corsican pine mixture.

In F.Y.23 the emphasis was again on Oregon Douglas fir of which 64 acres were planted. On the lower slopes facing north-east, a start was made with Japanese larch, 43.5 acres of the species were planted. In this year the heaviest programme of 176.0 acres was undertaken, and the area planted covered the greater part of the centre of the area. Other plantings were Norway spruce 23.5 acres, Sitka spruce 6.0 acres and Corsican pine 17.0 acres. The latter 17.0 acres were established by direct sowing and more will be said of this later.

The extensive Douglas fir plantations were again only partially successful, and there was a high percentage of failure. These areas in the main were beaten up over a period of years with Sitka spruce and Corsican pine. In some cases the Frazer River variety of Douglas fir was introduced in the beating up.

F.Y.24. This year's planting was concentrated on the rather more exposed west and north-west marginal areas. The main bulk of the planting was of Corsican pine and Scots pine but no mixtures of the two were used. Pine plantations in this year covered 36.0 acres, the remainder of the programme consisting of 13.5 acres of Sitka spruce and 17.0 acres of Douglas fir. The latter again failed badly, and subsequent beating up with Japanese larch rendered the areas into mixtures of the two species with Japanese larch predominant.

F.Y.25. In this year the plantations of the area were consolidated, and planting occurred on a variety of sites and aspects. The acreages of the species were:-

Scots pine	5.0 acres
Corsican pine	17.5 "
(Frazer River) Douglas fir	16.0 "
Norway spruce	8.5 "
Sitka spruce	22.5 "
Norway spruce/Sitka spruce	10.5 "
Corsican pine/Norway spruce	4.0 "
Scots pine/Norway spruce	3.0 "

No further planting was undertaken until F.Y.28 when 2.0 acres were replanted with Sitka spruce after a fire in P.23 Norway spruce. These intermediate years, however, saw a great deal of beating up, particularly in the Oregon Douglas fir. The Frazer River variety was introduced during much of this beating up.

Between the years F.Y.28 and F.Y.40 planting operations were confined to replanting after small fires, and in one case to replanting a small area of the Douglas fir/Sitka spruce mixture which had been destroyed by ice storm.

In F.Y.41 10.5 acres of Japanese larch were planted to replace the acquired plantation of European larch/Norway spruce/ash/elm/and oak in Compartment 1. This area had been clear felled in F.Y.40 as a war requirement.

No planting operations were carried out in Forest Years 42, 43, and 44. Then in F.Y.45 the underplanting of 5.0 acres of the originally acquired Japanese larch was undertaken. This Japanese larch crop had survived only in groups as a result mainly of adverse drainage conditions. The area had grown heavy alder/birch/willow scrub in the gaps. Norway spruce was used for the underplanting, and two beating up years were necessary for establishment as the result of ravages of stray horses.

Further extensive underplanting was carried out in F.Y.46 and F.Y.47, the crop selected being the P.23 Japanese larch on the low lying slopes facing north and north-east. Species used for underplanting were Norway spruce, Lawson's cypress, Tsuga, Douglas fir and beech.

No further planting operations have been undertaken to date, but for some time to come the continued thinning of plantations particularly on the lower ground will allow of further underplanting.

The planting at Llantrisant can be seen to conform to a pattern which is generally true, but has minor variations. On the higher, more exposed ground to the west, north-west and south-west the plantations are predominantly of Corsican pine and Scots pine. On the middle slopes facing east the crops are mainly Douglas fir with a strong admixture of Sitka spruce introduced in patches, and during the beating up, while the more sheltered lower slopes between the main road and the river are mainly of larch.

Methods of Planting and their Success

Until the underplanting of F.Y.45 and later, the forest was created almost entirely with the mattock. No form of soil cultivation was used, and it is doubtful now whether the failure or success of the species used can be attributed entirely to suitability of site. Any form of ploughing would doubtless have proved extremely difficult, but it may possibly have induced better growth, particularly in the Douglas fir had such cultivation been carried out. During the underplanting of the Japanese larch a Schlich spade was used to give a semi-pit and early establishment followed this method.

Success of Species

Douglas fir - The Oregon variety has done very poorly and an assessment of the failures made in 1938 showed that on an average 26% failures could be found. In some plantations as many as 66% had failed to become established. The plantations have been heavily beaten up, and in general it will be necessary to favour the introduced species if a satisfactory final crop spacing is to be achieved. The existing plantations of pure Douglas fir show an extremely irregular stocking and early thinnings produced very little material since the trees to be removed had grown very slowly, and were largely suppressed. Whether or not the condition of the plantations made them more vulnerable to infestation by Adelges cooleyi it is difficult to say, but the pest is common and the foliage of the trees is in poor condition. In general the trees are thin crowned and have poor needle development.

Douglas fir var. caesia

The so called Frazer River Douglas fir has done rather better, and in addition to the losses being much fewer the trees show a more healthy appearance and have grown more rapidly. To give data to support this claim is a difficult matter since the variations in result are widespread, but the general impression nevertheless remains. It is doubtful if either variety of Douglas fir has proved a happy selection on this terrain.

Japanese larch

This species established itself early in most cases, and required little beating up. Growth has been good in most cases, and form has been well maintained.

The thinnings of the P.21 to P.23 Japanese larch are large enough to produce the largest pitprops used in the South Wales Coalfield - 13 ft and 11 ft with a top diameter requirement of 7 in. - 9 in. The use of the terms good for growth and form is related to the other species at the Forest, but would not be altogether true if the Japanese larch were compared with that growing at other forests in South Wales.

European larch

This species is not "at home" generally in the coalfields. The one small plantation at Llantrisant has been thinned three times, and during the current winter has been more heavily thinned for underplanting with Thuya. Some of the poles removed during the thinnings show signs of incipient heart rot, and the form of the crop generally is less than satisfactory. In view of the fact that the plants used to create this plantation were culls it is probably unwise to draw any definite conclusions as to the success or failure of the species on this area.

Corsican pine

This species has done well at Llantrisant and plantations with marked exposure to the prevailing west wind are well stocked, of reasonable form, and productive. The success of the areas in Compartments 15 and 16, which were direct sown with the species, is of particular note. The damage to the pine plantations caused by the ice storm of the winter of 1939-40 has largely been eradicated by the removal of the forked trees during subsequent thinnings. The removal of material from the more remote pine plantations is generally a matter of urgency due to the presence of Ips sexdentatus and other bark beetles in the area. This has created a problem in extraction with an interesting solution.

Scots pine

This species, although not as successful as the Corsican pine, has done reasonably well on the exposed sites. Form is generally rough and damage to leaders during the ice storm was more extensive. Needles have been cast generally on all but the youngest shoots, and it is thought that this may be in part due to exposure to salt-impregnated south-west wind and also possibly aggravated by attacks of Lachnus sp.

Sitka spruce

Where planted at low levels has not done well. The adverse effects of frost and, in some cases, delayed drainage has weakened the crops, and Neomyzaphis and Armellaria mellea have accentuated the poor condition. It is dountful whether these factors tell the whole story, since a die-back in apparently healthy trees is the subject of a current examination. Where the Sitka spruce has been introduced into Douglas fir plantations, it has shown itself to be more suited to the sites and is being favoured during thinning operations.

Norway spruce

This species has established itself well and has good stocking and form despite the slow rate of growth. The prolonged period of check suffered by most plantations has now been mainly overcome, and recent thinnings show that annual shoot growth has risen in many cases to about a foot. With few exceptions, the Norway spruce has a healthy appearance, and the ready sale of tops from thinnings for Christmas trees is indication of good needle cover.

Abies grandis

A small area of this species was planted alongside the road in Compartment 1 in F.Y.41. It was intended as an amenity in the first instance, but its clean rapid growth is the subject of careful observation. The neighbouring Japanese larch has been cut back to see just what this species will do on the area. Annual shoot growth in the last three years has been of the order of 18 in. to 20 in.

Beech

The earliest plantings in the forest by the Forestry Commission was of two row wide amenity strips of this species. Although the beech have retained the characteristic form of the Dean Forest beech, they are vigorous and healthy in appearance. This is notable too in that this species was the most severely damaged during the 1939-40 ice storm. In some cases, the trees have recovered remarkably well from this damage, and there were few cases of death from this cause.

Research

Little research has been carried out at the forest, but some spacing plots were laid down in the Corsican pine in Compartment 17. Three spacings

of 4 ft. x 4 ft. 5 ft. x 5 ft. and 6ft x 6ft. were used. As far as can be judged the wider spacings gave the better results, but it is thought that too little care was exercised in the timing of the thinning operation, particularly in the plot planted at 4 ft. x 4 ft.

The direct sowing which has proved so successful was carried out in 1923 on weed free areas on patches 4 ft. 9 in. apart. The patches were prepared by mattock and rake. No beating up was used and in 1930 the crop was 2 ft 6 in high, and looked sickly and yellow, probably due to overcrowding. In 1930 the best stem of each patch was singled out and an immediate improvement occurred. By 1933 the crop was 15 ft. high.

Part of the sown area was thinned by Home Grown Timber Production Depart ment, and yielded 501 stems/acre with a volume of 898 cu. ft. After this operation 970 stems/acre remained. At the second thinning in F.Y.49 the crop had reached a height of 30 ft - 35 ft.

Future Problems of the Forest

The Policy of Management as laid down in the current Working Plan is as follows - "It is intended that the forest shall be managed to produce mining timber for the South Wales Coalfield and general constructional timber, and in so doing improve the amenities of the area and provide the industrial population with alternative employment."

The greatest part of the area is now in the thinning stage and the continuation of the tree crop has been assured in some cases by the under-planting of the existing crop. Continuation of the present thinning policy should lead to satisfactory final crops of useful timber.

The forest already employs 28 men in full time work, and this staff can be maintained for many years. The addition of a new detached block at Trecastell some three miles away, will mean that this staff may well have to be augmented in the near future.

One of the greatest problems of the future lies in the regeneration of the the existing Douglas fir plantations. Further use of the species would be unwise, and it would be difficult to find a species that could be suitably underplanted, and which would fit in with the policy of management. One solution might be to clear fell the existing plantations at maturity, drain and replant with the Japanese larch which seems so well suited to the coal measures. To maintain the amenities of the area the beech, which has

done so well, could be introduced further by underplanting in some of the better stands.

Markets have not been, nor are likely to be, a problem at the forest which is able, in many cases, to deliver pitwood at collieries within three miles of the point of production. The topography of the ground with its acute slopes and the unusable gradients of many of its existing rides have, in the past, made extraction often costly and difficult, but the initiation of a network of tractor tracks and fair weather roads feeding on to one all-weather road promises to do much to make extraction both easy and economical.

Working Plan Provisions for the Forest

A Working Plan covering the period October 1949 - September 1959 is at present in operation in the forest. This plan provides mainly for extensive thinning operations, together with the completion of brashing works and cleaning. Prescriptions for the thinning of about 100 acres for each year are contained in the plan. The forest is well situated for the disposal of produce, and in F.Y.50 the receipts exceeded the expenditure by a good margin. With the introduction of a road and tractor track network, production costs should fall and the margin of profit should increase annually.

New Acquisitions

It is unlikely that the main block will be increased by new acquisitions, but operations will commence at a detached area known as Trecastell in the summer of 1951. This area is low lying generally, and will not present the same sylvicultural problems as exist at the main block of Llantrisant.

Acknowledgments

Much local history additional to Forest Records and Inspection Notes, and now contained in this report, was supplied by Forester T. Caddy (retired), who was responsible for local supervision at the Forest from 1925-1945. The writer acknowledges his assistance with thanks.

CONSERVATOR'S COMMENTS

Pre-acquisition History:

Briefly, all that can be learned is that in or about 1886 the Bute Estate started planting larch and Scots pine over about two thirds of the area. These species were planted pure and in mixture. The remainder of the area carried mixed hardwoods and it would seem that when the land was cleared during the 1914/18 war, many of the conifer stands carried a proportion of hardwoods.

Old workmen associated with the estate have estimated that the bulk of the timber felled ran about 40 tons to the acre with some of the high, thin-soiled sites yielding probably about 25 tons per acre.

Early History

A working plan report compiled by Divisional Officer C.O.Hanson in 1925 states:-

> "At the time of acquisition in 1921, the area was chiefly covered with dense bracken, gorse with some bramble and fine grasses. Part of the area had recently been burnt perfectly clean. On moist places, especially in "The Bog" on the ridge are Sphagnum, rushes, cotton grass and Molinia".

Most of the area was planted between P.21 and P.25 using the Schlich spade and 2+1 or 2+2 transplants for all species except Corsican pine in which 1+1 transplants were used. In P.23 an area almost clear of weeds was direct sown to Corsican pine by preparing patches 4 ft. 9 in. apart.

Notes on Species:

Douglas fir was planted over about 178 acres of all site types and without complete regard for the suitability of the species to the site. These plantations gave constant trouble and were the subject of frequent inspections and reports. Many deaths occurred from natural causes as well as from excessive competition from bracken and coppice, from sheep browsing and from rabbit damage. Douglas fir of the so called Fraser River variety, planted in Compartment 18 gave generally better results and some use was subsequently made of this variety in beating up the Oregon Douglas. Very extensive reconditioning of the Douglas plantations was carried out F.Y.32 to 34 using Sitka spruce, Corsican pine, Japanese larch and beech.

On the upper Calluna/bilberry slopes the Douglas fir had practically failed and was replaced by Corsican pine and Scots pine. The result is that very few areas of pure Douglas fir remain today but in mixture with beech, Sitka spruce, and Corsican pine there are many good Douglas stems and generally speaking, these mixed plantations after thinning (in some cases second thinning) are not unsatisfactory.

European larch, planted only on a small scale, has, as elsewhere in South Wales, grown badly. The worst stand in Compartment 5 was clear-felled and replanted with Norway spruce in P.47. Other stands, heavily beaten up with Japanese larch are now, after thinning, mainly Japanese larch.

Japanese larch, planted on the lower sheltered slopes has been generally satisfactory. In Compartment 21 etc. Japanese larch planted P.23 has been opened up and underplanted with Douglas fir, Norway spruce, Lawson's cypress, Tsuga and beech. It is very evident that had more use been made of Japanese larch, the Llantrisant plantations would have been more successful today and at less cost.

Norway spruce on the lower sheltered slopes, after a period of check, particularly on sites which reverted to Calluna, has grown well and is now regarded as one of the most successful and profitable species at Llantrisant.

Sitka spruce, both when planted as the first crop and when used to beat up Douglas fir and other species started slowly but improved rapidly as soon as the canopy closed. When turf-planted in the wetter areas the check period was substantially reduced.

The pines have been generally satisfactory. Some blast damage in Scots pine has occurred on the exposed south western slopes and Corsican pine would probably have fared better on these sites. Scots pine in sites similar to Corsican pine is only slightly inferior in height growth but is coarser. Stems badly damaged in the 1939/40 ice storm have been mainly removed in thinning. Present evidence suggests that Corsican pine will prove the better species at the higher elevations. Some "die-back" was observed in 1942 in Compartment 16 Corsican pine sown P.23 and on investigation by Mr. W. R. Day was subsequently proved to have been caused by a species of Pythium. Similar "die-back" was found in Japanese larch in Compartments 21 and 24. In neither case has the malady spread to

any extent, possibly because thinning, through opening out the crops, has stimulated strong growth of both root and shoot.

Beech planted alongside rides in beating up Douglas and other conifers has grown well throughout its life and suggests that more use could be made of this species in underplanting etc. with a view to the creation of substantial areas of pure or mixed beech woods in the second rotation.

Working Plans:

A record on working plan lines and covering the years P.21 to P.26 was prepared by Divisional Officer C.O. Hanson in 1925 and was supplemented by an additional record covering the years P.27 to P.36. This record contained few prescriptions and these only in general terms.

In 1943 a description of the compartments was compiled but no further steps taken to complete a working plan.

The current plan covering the Forest Years 1950 to 1959 was prepared in 1949 and applied forthwith. This plan prescribes treatments, schedules, thinnings etc. and provides for revision at the end of the first 5 year period.

With plantations being thinned at an average rate of 125 acres per annum, improved access became urgent. A road plan has been prepared, work has started and the one all-weather road together with the most important "feeders" should be completed this year.

Summary:

The general view is that this forest would have been better and given much less trouble if greater care in choice of species had been exercised in the beginning and if more money had been available for maintenance. The present view is that too much emphasis was placed in the past on the effect of smoke and fumes and that the factors limiting success of certain species were largely edaphic.

One outstanding point emphasised by the history of these woods is the manner in which money has been wasted by lack of intelligent beating up. Far too many plants have been used and many without the remotest chance of survival.

(Sgd). W.D. Russell

Conservator, South Wales.

APPENDIX I

Notes from Inspection reports

In 1929 Llantrisant was visited by Divisional Officer C.O.Hanson, who made the following points:-

(i) Conifers were suffering generally from coppice interference with leaders, and had to be freed as a matter of urgency.

(ii) Some of the groups of acquired Japanese larch in the south-east corner of the area required light thinning.

(iii) Attention was drawn to the high fire danger existing alongside the railway and the need for a cut fire line was stressed.

In 1932 Mr. O.J. Sangar visited the area and the report stressed the following points:-

P.21 and P.22 plantations - The main species of Douglas fir was not satisfactory, but appeared to be improving. Stocking was incomplete and growth very varied. While some of the trees were 15 ft. high, others were still in complete check in the bracken. It was difficult to decide at that time how much of the existing Douglas fir would form a crop with the existing hardwoods. Japanese larch, Norway spruce and Corsican pine had generally formed canopy.

P.23 - P.25 areas - Here Douglas fir was used less and Japanese larch, Corsican pine and Sitka spruce planted over the greater part. The area as a whole was considered satisfactory, though there were gaps caused by sheep damage and by persistence of bracken. The Corsican pine and Scots pine had formed canopy and the Japanese larch had attained a height of 15 ft. Although Douglas fir had generally only 70% stocking, it was thought to be improving. Many of the trees were forcing out of check in the heavy gorse and bracken.

Further light thinning was considered necessary in acquired Japanese larch plantations.

In September, 1932, Mr. N. A. Wylie prepared a detailed report on the Douglas fir plantations at Llantrisant, and gave prescriptions by sub-

compartments for its future treatment. These prescriptions were endorsed by Divisional Officer (3) Mr. Scott, and Mr. Ryle commented that in his opinion much of the failure of the Douglas fir was attributable to smoke and fumes from nearby industrial workings. Blast and soil conditions were probably contributory factors. In essence Mr. Wylie's proposals were followed, particularly in regard to the filling up of the Douglas fir gaps with Sitka spruce and Japanese larch with some Corsican pine.

In August, 1933, there was a visit of inspection by the Assistant Commissioner, then Mr. W.L. Taylor. The following points were made :-

(i) Acquired plantations still required thinning in some groups.

(ii) Although the beating up of Douglas fir plantations with Sitka spruce, Corsican pine, and beech had been successful, further work should be suspended until more large beech or well furnished Sitka spruce were available.

(iii) Sheep trespass was too prevalent. Work would be required on the fences immediately.

(iv) Coppice cutting particularly in Norway spruce and Sitka spruce had been neglected, and must receive early attention. Care had to be taken not to overdo this, as some of the coppice might be required to fill up the gaps in the canopy.

In 1936 Mr. G.W. Backhouse prepared a report on the condition of crops at Llantrisant, and gave detailed prescriptions for their future treatment. This report was to be used as a guide to the preparation of a plan.

In 1936 Assistant Commissioner Mr. W.L. Taylor again visited the forest, and made the following points:-

(a) Douglas fir plantations in which treatment had lapsed after previous inspection were found to be going further back. A delayed beat up would have to be undertaken. Japanese larch and beech were to be used except on Calluna areas, where Corsican pine would be introduced. Any groups of the original Douglas fir which showed signs of getting away were to be retained.

(b) Corsican pine and Scots pine plantations had suffered wind-blow, and blown trees should be removed at once. Some trees had been attacked by Pissodes and would have to be removed and burnt.

(c) The Assistant Commissioner was again favourably inclined to more extensive use of beech on the area, and suggested that it might prove to be a useful main crop in later rotations.

In 1937 the Assistant Commissioner, Mr. W.L. Taylor, paid another brief visit to the forest and made the following observations:-

(i) High pruning of the larches (P.21 and P.23) had been overdone, and was an expensive operation which should have been obviated by earlier treatment of the plantations.

(ii) The 35 year old mixed hardwood and conifer crop in Compartment 1 needed thinning and should then be underplanted with large beech.

In May of 1937 Sir Alexander Rodger, Commissioner, visited the forest, and had the following observations to make :-

(i) The Oregon Douglas fir was still going back, and looked extremely unhealthy. This species had proved itself quite unsuitable for the locality and soil. The Frazer River Douglas, although better, was still behind the Corsican pine and Japanese larch of the same age.

(ii) P.23 Norway spruce was seen to be coming strongly out of check.

(iii) Sir Alexander Rodger remarked on the good growth of the beech, and considered it might profitably have been used more extensively in plantations.

(iv) The acquired Japanese larch (P.19) in Compartment 1 was seen to be responding well to high pruning and thinning.

Visits by the Chairman, Lord Robinson

An inspection was carried out on 26th July, 1937, and present were The Chairman Lord Robinson, The Assistant Commissioner, The Divisional Officer (Division 3) and District Officer.

In P.23 Japanese larch in Compartment 24 the coppice had been cut out, trees brashed and selected trees saw pruned. This work had been stopped by the Assistant Commissioner in view of the high cost of the pruning operation.

The Chairman considered that brashing could not be undertaken for two years, when the technique should be to brash every third row, which would reduce the cost of the operation. This would give opportunity for examination of the remainder of the crop with a view to thinning and further pruning.

P.25 Frazer River Douglas in bracken-Calluna was showing improvement, and in some places the canopy was closing.

P.22 - Mixed Corsican pine and beech was doing well. The beech was pushing strongly through the semi-canopy of the pine.

P.23 - Corsican pine. Direct sowing was observed to be doing well, although the Chairman considered that dominants would have selected themselves and therefore the topping operation of 1930 could have been avoided. Mr. Ryle had previously remarked that the "topping" had been necessary due to the sickly condition of the crop, which condition was attributed to excessive root competition.

The Chairman also remarked that much of the beating-up which had been carried out had been quite unnecessary. The forester would have to acquire a greater appreciation of the correct technique of filling blanks in older crops.

In the mixed hardwood/conifer plantation it was proposed to start underplanting. A clear felling in 1940 prevented the carrying out of this proposal.

The Chairman commented favourably on the underplanting with beech in P.19 Japanese larch of Compartment 1 and pointed out that this should serve as a good guide for treatment of other Japanese larch plantations in the region. About 800 plants to the acre, well spaced, should be adequate. It was considered that too many stems had been selected for high pruning.

The Chairman agreed to the proposal to abandon the old nursery for a site for a Forest Worker's Holding. This is now a "fait accompli".

The Chairman, Lord Robinson, visited the forest in March of 1947, and was accompanied on this occasion by Conservator, South Wales, Mr. G.B. Ryle, District Officer Mr. R.E. Pallett, and Forester Mr. A.G. Stewart.

P.23 Japanese larch in Compartment 24 was inspected, and the Chairman considered that unless underplanting was considered likely further thinning would be unnecessary for some considerable time. The average volume of 60 cu.ft. per annum (T.O.B.), which had been removed, was considered satisfactory.

In Compartment 21 the P.23 Japanese larch had been heavily thinned, and in some cases stocking had been reduced to 150 stems per acre. In F.Y.45 underplanting of 5¼ acres with Norway spruce, Douglas fir, and Lawson's cypress was undertaken. The Chairman questioned the advisability of underplanting with Lawson's cypress which was unlikely to produce a useful crop. The branching of brushwood had been unnecessary in addition to which too many plants had been used. The number per acre could profitably have been reduced to 500.

The Chairman advised that the larch crop be allowed to develop, and at a later stage high pruning could be contemplated.

If the undercrop proved successful, the Japanese larch could be reduced to 60-90 stems to the acre. Although the Chairman was of the opinion that Douglas fir and Tsuga were the best species for this type of underplanting, he agreed to the introduction of beech, although he doubted the probability of its success.

The Chairman observed, as had other inspecting officers, that there was evidence of sheep trespass, and recommended that the stone boundary wall be replaced by a wire fence.

It was the Chairman's opinion that the mixed Douglas fir plantations would make a reasonable timber crop some day. More success might have attended if Scots pine had been mixed with the Douglas fir on the poorer soil sites.

The Chairman thought that the die-back in the direct sown P.23 Corsican pine was not serious, but that trapping of the Pissodes, obviously present, might be the solution. Surprise was expressed at the heaviness of the thinning in this crop, but it was nevertheless looking very promising.

The Chairman was shown some P.21 - P.22 European larch which had been attacked by Fomes. He advocated a replanting with Norway spruce in badly infected areas.

The Chairman concurred with all other inspecting officers that the beech looked well, and with care the crop should do well. There is a future for this species at Llantrisant. The Chairman thought that, while some crops were growing slowly, there had been a general improvement in the plantations at Llantrisant.

District Officer's Note 1950

The improvement, although slow, has continued. Further brashing, cleaning and thinning operations have much improved the appearance of the crop. In some cases, improved drainage has shown good results. The Douglas fir areas, although irregularly stocked, will eventually produce timber stands, although the volume of produce to be expected from thinnings will not compare very favourably with that from other species.

HISTORY OF LLANTRISANT FOREST

APPENDIX II

SUPERVISION

Operations were started in the early part of 1921 soon after the conclusion of the lease. The record of superior supervision has gaps which are difficult to fill from existing records, or from the memory of officers who were associated with the early development of the forest. Hensol Forest, although operated as an independent unit, is a beat of Llantrisant Forest, and is correctly known as Llantrisant Hensol. From the time of its inception in 1928 until present time it has been operated as a distinctly separate unit. In view of the fact that it has been under separate management and supervision, and that it presents an entirely different set of sylvicultural and management problems, it will not be included in this history.

Senior Officers

Divisional Officers

1921 - 1922	W.H. Lovegrove
1922 - 1931	C. O. Hanson
1931 - 1937	F. Scott
1937 -1939	G. B. Ryle
1939 - 1943	F. Cownie
1943 - 1946	R. G. Broadwood
1946 - 1947	N. A. Wylie
1947 - 1949	W.D. Russell
1949 to date	J.T. Fitzherbert

Conservators

1947	W. A. Muir
1947 - 1949	G. B. Ryle
1949 to date	W.D. Russell

District Officers

1922	R. P. Dent
1923 - 1925	O. J. Sangar
1925	R. G. Broadwood
1926	L.A. Newton
1927	R.G. Forbes
1929 - 1934	G.B. Ryle
1934 - 1939	R. Cowell Smith
1939 - 1940	G.E. Godwin
1940 - 1944	J.H. Currie
1944 - 1947	R.E. Pallett
1947 - 1949	J.H. Currie
1949 - 1950	L.J. Slow
1950 to date	J.H. James

Foresters in control at the unit from 1921 to date were as follows:

1921 - 1925	Mr. Duncan Reid
1925 - 1945	Mr. T. Caddy
1945 - 1948	Mr. A.G. Stewart
1948 to date	Mr. W.D. Milsom

Llantrisant

LLANTRISANT FOREST

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Working Plan 1950-1959.

FORESTRY COMMISSION
SOUTH WALES CONSERVANCY

COMPILED AND DRAWN BY:

L. J. Allen
DISTRICT OFFICER

APPROVED BY:-

W. D. Russell
CONSERVATOR

27th August 1949.

KEY

Forestry Commission Boundary	25
Compartment Boundary	23
Subcompartment Boundary	
Species and Planting Year	SS P25
Conifers	
Hardwoods.	
Agricultural Land	FILE

SCALE :- 6 INCHES = 1 MILE

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