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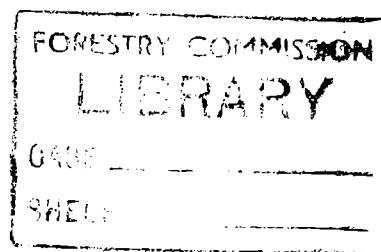
FOREST

SW(E) CONSERVANCY

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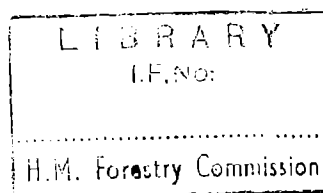
of

BRENDON FOREST

1920 - 1951

SOUTH WEST (ENGLAND) CONSERVANCY

HISTORY OF BRENDON FOREST



	<u>Contents</u>	<u>Page</u>
<u>GENERAL DESCRIPTION OF THE FOREST</u>	1
Situation	1
Area and Utilisation	1
Physiography	3
Geology and Soils	3
Vegetation	4
Meteorology	4
Risks	4
Roads	4
Labour	5
<u>SILVICULTURE</u>	5
Preparation of Ground	5
Choice of Species	5
Planting - spacing, type of plants used, methods of planting, annual rate of planting, manuring, success of establishment	6
Ploughing	7
Beating Up	7
Weeding	8
Mixtures of Species	8
Rates of Growth	8
Past treatment of established plantations	10
Research - Note by the Research Branch on pine/spruce mixtures	12
Conclusions	27
<u>APPENDICES</u>		
I Notes from Inspection Reports	29
II Record of Supervisory Staff	32
III Map of the Forest		

HISTORY OF BRENDON FOREST

GENERAL DESCRIPTION OF THE FOREST

Situation

Brendon Forest was originally called Exmoor. The land of the first acquisition (Croydon Hill) is an outlying spur of Exmoor. The name was then changed to Brendon about 1933 because further areas were acquired on the Brendon Hills, Somerset, and this name seemed more appropriate.

Area and Utilisation

The land was mainly used for shooting and hunting. The stocking of the hill areas was sparse. The woodlands, especially on the Brendon Hill area, were used mainly as a reserve for game, but a certain amount of oak coppice was cut annually for firewood and tanning purposes. Timber was cut as required.

A large area of the Brendon Hills was, until recently, extensively mined for iron-ore.

Acquisition and land utilisation details are given in the following tables (Tables I and II).

TABLE I

From	By	Date	Plantations Acquired	Plantable, excl. Col. 4	Nurseries	Agricultural	F. W. H.	Unplantable excl. Col. 4	Other Land			Total
									Description	Area	(12)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
A. F. Luttrell	Lease	29. 9. 20	-	740	-	-	-	49	-	-	789	
Mrs. L. Shoppe	Convey- ance	30. 1. 25	8	258	-	-	-	-	-	-	266	
Sir W. G. Trevelyan	Lease	24. 6. 25	1	160.5	-	-	-	-	Quarry etc.	3.5	165	
W. P. Cross	Convey- ance	21. 3. 26	42.5	514.5	4	233	4	-	Roadside verge	2	800	
C. Reed	Convey- ance	9. 5. 31	-	133.5	-	-	-	-	Quarry	.5	134	
G. Moles	Convey- ance	25. 3. 35	14.5	21.5	-	-	-	-	-	-	36	
Totals			66	1828	4	233	4	49	-	6	2190	

TABLE II

(a) Plantations -			
Acquired	64		
Formed by Commission	1828		1892 acres
(b) In hand, awaiting planting -			
Blanks after felling	2		
Burnt areas	-		
Other land	-		2 acres
(c) Nurseries			4 acres
(d) Agriculture, Number of			
tenancies	3	Area:	233 acres
(c) F. W. H. Number	2	Area:	4 acres
(d) Unplantable land in hand			49 acres
(g) Other land			6 acres
			2190.
	Total		2190.

The sporting on the Croydon and Monkham areas was never very valuable, but was kept as an outlying area for occasional drives for black game. These were fairly numerous up to 1926, but have deteriorated owing to poor stock.

The sporting on the Brendon Hill areas was at one time fairly valuable, but is now worth nothing.

The methods of farming and tenancies etc. do not affect the utilisation of land.

Hunting (deer and fox) was intensively carried on, and to a lesser extent it still is.

Physiography

The elevation varies from 500 ft. to 1300 ft. with varying degrees of slope - the steeper slopes occur on the Brendon Hill areas. All aspects occur, but a northerly aspect predominates. The exposure is very severe, both from the sea, and from the south-west particularly on Croydon Hill, Monkham Hill, Kennisham Hill, and Wootton Common.

Geology and Soils

Nearly the whole Forest lies on the Devonian series of the Upper and Lower Old Red Sandstone. Shales occur on parts of the Brendon Hill areas, where iron ore is prevalent - these areas were extensively mined for iron-ore up to approximately 60 years ago.

Vegetation

Vegetation on the moorland areas, consists mainly of Ulex gallii, Calluna, Erica, Vaccinium, Pteris and grasses.

The main vegetation on the woodland areas consists of Pteris, Vaccinium, and Rubus, with an admixture of Calluna, and grasses.

As a matter of interest, two small patches of Empetrum nigrum still exist on Croydon Hill - this is a relic of an Alpine flora, and only occurs elsewhere on a few spots on Exmoor and Dartmoor in the South and West of England.

Meteorology

No accurate recordings of rainfall have been taken on the Forest. The rainfall, however, varies from 50 in. per annum on the lower parts of the area, to 70 in. on the higher ground.

Frost is not an important factor.

Risks

The greatest risk is fire, especially on the original moorland areas.

Exposure and wind probably are the next risks of importance - much blast damage has occurred in the past.

Deer and rabbits occur, the former plentifully, but the damage they do is negligible.

Grey squirrels are very scarce at present.

Trespass, particularly in the whortleberry season, occurs, but is a small risk.

Insects and fungi have not caused much damage, but Armellaria occurs sporadically.

Up to 1926 considerable damage was done by black game to the leading buds of Scots pine on the higher areas of Croydon and Monkham Hills.

Roads

A very necessary and important road scheme has been in operation for about three years. The network of roads serves two very important operations viz. extraction of produce, and mobility for fire protection.

The completed scheme to date is as follows:-

All-weather roads	6 miles 1662 yards
Fair-weather and Feeder roads	10 miles	158 yards	
Graded tracks	2 miles 1116 yards

Labour

The labour position is such that just enough men are available for the maintenance of the plantations. With future acquisitions more labour will be required.

The labour is fairly experienced and most of the men live reasonably near the forest.

SILVICULTURE

Preparation of Ground

All areas in the past were fenced against rabbits and little damage was experienced.

The moorland areas were burnt as necessary, especially the gorse areas. No other preparation was done.

In the coppice areas, the coppice was clear cut and burnt, except, of course, areas which were accepted as coppice, with a view to ultimate conversion to High Forest.

Choice of Species

In the early years this was a difficult problem. The Croydon and Monkham areas were intended to be almost pure Corsican pine, but this species was not available to that extent, and a compromise was adopted by using a one in four mixture of Corsican pine and Scots pine, viz: one row pure Scots pine and one row alternate Scots pine and Corsican pine. This, however, was not sufficient to enable the early programmes to be completed, and the remainder was planted with pure Scots pine, a mistake which has been obvious ever since.

The better types of moorland were correctly planted with Japanese larch, Douglas fir and Sitka spruce.

The moorland areas on the Brendon Hills were planted with spruces and Corsican pine and Douglas fir and on the whole have done well. European larch has been a definite and disappointing failure, due probably to combined effects of frost, rainfall, Argyresthia, canker and unsuitable race of plant.

The coppice areas and old woodland on the Brendon Hill areas were planted mostly with Douglas fir and Japanese larch with occasional areas of Thuja, Tsuga and Lawson cypress. Much more use should have been made of hardwoods, especially beech - probably 75% of this area could have been put under this species.

European larch was put in to a small extent, but has been a dismal failure.

Planting

(a) Spacing

The pines were planted at a spacing of $4\frac{1}{2}$ ft. x $4\frac{1}{2}$ ft.

European larch, Japanese larch and the spruces were planted at 5 ft. x 5 ft. on hill areas. Douglas fir was planted at 5 ft. x 5 ft. and 6 ft. x 6 ft. on the old coppice woodland areas.

(b) Type of plants used and source of origin

During the first year (P.21), a large percentage of the pines was supplied by the Trade, and these were of a very bad type, the root and shoot being very disproportionate.

The Douglas fir and European larch were supplied from Tintern, Dean and Windsor and on the whole were reasonably good plants.

The P.22 plants came mainly from Salcey, Bere and New.

The European larch came from Alice Holt.

The pines were not good, and much too large a type for dry moorland conditions.

From 1923 onwards, the supply from the two local nurseries was available and these were of a very good type and size.

Local sources of supply were sufficient for most of the subsequent planting - the plants were therefore acclimatised and of quite a good type.

(c) Methods of planting

The notch planting with the pick mattock has been almost invariably used.

The interplanting of some of the Scots pine areas with Sitka spruce necessitated hand-turfing. These turves were shallow and dry, but apparently they have proved definitely successful. The growth of some of the Sitka spruce is astonishingly good.

(d) Annual rate of planting

P.21	222.9 acres	P.31	105.1 acres	P.41	18.0 acres	(Replant of a felled area)
22	185.2	P.32	87.4			
23	114.1	33	84.0	42	3.0	
24	31.7	34	47.9	43	2.0	
25	49.1	35	49.0	44	-	
26	98.4	36	51.8	45	-	
27	130.9	37	44.1	46	18.3	
28	193.2	38	47.6	47	-	
29	126.2	39	15.9	48	8.	(Replant after a fire)
30	101.3	40	-	49	-	
				50	-	

(e) Manuring

Some of the interplanted Sitka spruce on Kennisham were slagged about 1932, but little effect of this can be seen.

(f) Success of establishment etc.

Generally speaking establishment has been good. Subsequent growth, especially in the Scots pine areas on Croydon has been very poor above the 900 ft. contour, owing to blast and poor rooting systems.

The use of seedlings was negligible, so no judgment can be formed.

European larch has been the greatest failure. This species established itself, but die-back has occurred as the result of a combination of causes.

The Forest has improved very much latterly.

Ploughing

Only a very small amount was done on Croydon Hill, and this experimentally, and planted with Sitka spruce at an altitude of 1200 ft. The results are rather disappointing, owing largely to the unsuitable type of plough used, viz: the "Turnall".

Beating up

The results of this, have I think, invariably shewn that most beat up plants have become the suppressed trees in the resulting crop.

For several years pines were beaten up with pines.

A change of policy occurred about P.32, when, owing to the extremely poor condition of the Scots pine on the higher altitudes, interplanting with Sitka spruce on turves, in the P.22 and P.23 pine areas, was adopted. This would have been successful, had not the pines suddenly improved in growth etc. and so suppressed a good many of the Sitka spruce.

It is difficult to say what the exact treatment of these wind-blasted unsuitable species should have been. One wonders whether a more drastic interplanting would not have been more successful, e.g. removal of whole rows of Scots pine.

Generally speaking, however, the beating up in most areas seems to have fulfilled its function and that a reasonably well-stocked crop has resulted.

Weeding

The weeding from the commencement of the Forest was intensive both in bracken and gorse areas. It was delayed sometimes during drought conditions, but this intensive weeding has been justified I consider - in the early days it was often the only means, incidentally, of controlling the rabbits! In the coppice areas it was particularly valuable; had it not been systematically carried out the crop would have been completely suppressed.

Mixture of species

The Corsican pine and Scots pine mixtures were planted contemporaneously, on the one in four principle (see section on beating up).

On Monkham Hill Corsican pine was beaten up with Pinus contorta.

The poor Scots pine above the 900 ft. contour was interplanted with Sitka spruce on turves.

Otherwise most of the Forest consists of pure blocks.

Rates of growth

The following table gives average rates of growth for different species at varying ages and altitudes.

Heights given in feet

Species	P. Year (Representative)	Age	Mean Height of Stand			Remarks
			Altitude 600 ft.- 800 ft.	Altitude 800 ft.- 1000 ft.	Altitude 1000 ft.- 1300 ft.	
S.P.	P. 22 and 23	29.28	36	30	18	Average rainfall 60 in. gentle slopes, severe exposure (mostly south-west).
C.P.	P. 22 and 23 P. 28	29.28	40	35	20	"
			-	-	15	
E.L.	P. 27	24	-	25	15	"
J.L.	P. 12 (acquired) P. 21 P. 36	39 30 15	64	-	-	"Die-back" severe Suitable sites on the whole
			35	40	-	
			32	35	-	
D.F.	P. 14 (acquired) P. 21 P. 27 P. 33	37 30 24 18	56	-	-	Good average sites
			45	-	-	
			50	37	-	
			38	32	32	
N.S.	P. 28	23	-	-	30	Very exposed. Rainfall 70 in. Flat.
S.S.	P. 27 P. 32	24 19	60	30	38	"A shallow combe. Exposed site, on bog.
			-	-	40	
P.C.	P. 32	19	-	-	15	Average rainfall 70 in. Flat. Very severe exposure (all aspects).

Past Treatment of Established Plantations

Complete brashing has normally been practised and this has tended to reduce the fire risk as well.

Pruning has been only carried out in a few elite stands of Scots pine, Corsican pine, Douglas fir and Sitka spruce.

Cleaning has been very slight on the hill areas. It has, however, been very extensive in the old woodland areas. Unfortunately the War caused a very serious delay in the cleaning and thinning programmes, but this leeway has now been made up.

Thinnings started really only progressively in 1946, when a too ambitious three year Thinning Programme was adopted. Owing to the delay caused by the War, it was difficult to get the plantations thinned in their proper sequence, the most urgent areas having to be dealt with first. This has now been practically overcome, but we have adopted a five year cycle for the pines, instead of a three year one. Labour shortage accentuated the difficulty. Thinnings have been generally on the light side. On account of their being delayed greater care to counteract windblow was necessary, and also a three year cycle gave more opportunity for light and frequent thinnings.

The production has been quite good considering the conditions, and good weight of pitwood has resulted in many cases, due to the slow growth.

The following table shows the average yields per acre removed in thinnings:-

Average thinning yields by species

<u>Species</u>	<u>P. Yr.</u> (representative)	<u>No. of poles</u> <u>per acre removed</u>	<u>Vol. removed</u> <u>per acre</u> <u>H. ft.</u>	<u>Material</u> <u>produced</u>
Scots pine	P. 22	260	336	Pitwood 75% Firewood 25%
Corsican pine	P. 22	340	180	
Japanese larch	P. 21 to P. 36	251	210	
Douglas fir	P. 14 to P. 33	313	394	
Norway spruce	P. 28	170	180	
Sitka spruce	P. 27 to P. 32	414	557	

Note by the Research Branch

Pine/Spruce mixtures.

October, 1951

General Remarks

This series of introductions of spruce into established pine crops has been the subject of report by the Research Branch in 1938 and 1940. The aims of this report are: (i) to present a picture of the crops as they are today, with particular reference to the status and prospects of the spruce; (ii) to explain the variable success of the spruce introductions; and (iii) to suggest further treatments which will bring the largest possible proportion of spruce into the final crop, without undue sacrifice of thriving pines.

Except where specifically stated, the report deals with the main series of introductions on Croydon Hill.

With these points in mind the Sitka spruce have been classified in each compartment as follows:-

Class A. Trees that are in the upper canopy, or, owing to the absence of close competition, will reach the upper canopy without further attention.

Class B. Trees that are not yet in the upper canopy but that may easily be brought into it by either the removal of branches from the surrounding pines, or in some cases by the removal of an adjoining pine.

Class C. Trees that are well below the general pine canopy and are suppressed. Such trees could only be relieved by the very drastic cutting of adjoining pines that are far ahead both in height and shoot growth.

The height and shoot growth of both pines and spruces have been measured and in the case of the latter species the total stocking and the stocking of Class A and Class B trees have been recorded. These figures will be found summarised in Table III, page 25, together with certain data for the pine crops at the time of introduction of the spruce.

Factors influencing the success of the spruce introductions.

Study of Table III will show extremely varied degrees of success in

these introductions, measuring success by the number, or proportion of the numbers originally planted, of spruce which have established themselves in or near the pine canopy without the removal of pine.

Success under this definition is plainly a matter of two principal conditions, (a) the height of the pine at the time of introduction of the spruce and (b) the relative growth rates of the two species since the introduction. These are not, of course, independent, both are influenced to varying degrees by a common set of environmental factors, and in addition (b) is to some extent dependent on (a). There is insufficient evidence to attempt a full analysis, and we can only remark on the main features.

In the 1938 report a good deal of attention was paid to soil variations between, and inside, compartments. These variations have certainly influenced the growth of both pines and spruces probably also the relative growth. The general appearance of Croydon Hill, however, now suggests that they are overlaid by the broad effect of exposure.

(a) Height of the pines at time of introduction

The pine crops on Croydon Hill into which Sitka spruce has been introduced were planted between 1921 to 1923 and Sitka spruce introductions were made in nearly every season from 1932 to 1940. In spite of the considerable age range of the pine crops there has not been a corresponding range of heights. Surprising small in fact, as may be seen in Table III.

This is due partly to the poor early condition of the pine crops in general, but principally to the accident that the later spruce introductions with the greatest age lee-way happened to fall on the ground with westerly exposure where pine has grown slowly in comparison with that on the slopes facing east or north-east. However, there has been some variation in the initial heights of the pine, and this is best shown in Table III Col.7. where the mean height of the dominants in the various pine crops is set out. (The crop mean, Col.6, is not so interesting, as it takes account of many small pines which have had no influence on the spruce introductions, and would indeed be themselves suppressed by their more vigorous neighbours).

It will be seen that the largest number of Class A spruces (Col.12) are usually to be found where pine crops had a 'dominant height' of 4 ft.- 5½ ft. at the time of introduction of the spruce, and that where this height was greater, there have usually been serious reductions in the numbers of Class A spruces.

There is a suggestion, however, that on certain sites exposed to the West, the initial height of the pine crop has been of less importance. This is illustrated by the behaviour of the last two crops in Table III.

(b) Relative growth rates of pine and spruce

It has been remarked above that the Scots pine crops with westerly exposure have grown more slowly than those on the more sheltered slopes facing East. (The general arrangement of the plantations is shown in Fig.1).

At the time of the spruce introductions the pine crops were poor, often retaining only one year's needles, and making small annual growth. Latterly, however, development of the pines has been much more satisfactory, particularly on sites having some shelter from the West.

The spruce has probably been less affected by exposure, and in any case has had some protection from the pine. Where the pine has been most retarded by exposure the spruce has exhibited a much faster relative growth rate than on more sheltered ground. This is illustrated in Fig. 2. On the sheltered areas where the pine has been favoured, the rate of growth of those spruce which are not suppressed is faster than that of pine, but here the lead of the pines remains considerable, and the difficulty of getting spruce into the canopy correspondingly greater.

Other observations

(a) Method of introduction of Sitka spruce

Two main methods were employed - (i) Spruce introduced at a spacing of 9 ft.- 9 ft. between the existing pine rows, which were 4½ ft. apart.

(ii) Spruce introduced in groups of 3 plants at about 18 in. apart, in the form of a small triangle, at points approximately 22½ ft. apart each way, between the pine rows. A patch about 30 in. square being dug over for each group.

The first method gave an initial stocking of about 540 spruce to the acre, and the second method some 270; however, since only one of each group can develop to any size the maximum complement of spruce is only 90 to the acre in this case, which rules out a final stocking of pure spruce. Apart from this objection which might be met by a closer spacing of the planting centres, there is much to be said for the second method. It is easier to tend, and the cultivated patches give the spruce a better start, also the tight group of three affords a good control of the Calluna.

(b) Past Treatment of the mixtures

Up to the present date there has been very little work done other than brashing and the removal of single lines of pines at 1 ch. intervals for inspection and extraction purposes.

Much of the pine is marked for thinning in Compartment 3 and in Compartments 7, 8, 18, and 21 a cleaning has been carried out, and in a few places where the pine are larger than usual, a very light preliminary thinning has been done.

A great deal more thinning and branch cutting will be required in the pines in many places to relieve promising spruces. Suggestions for this work are made later in this report.

At Kennisham Hill in the Sitka spruce/Pinus contorta mixture in Compartment 56 some rough cutting back of the pine branches has been done in places and this is mentioned again later in this report.

(c) Pine nurses other than Scots

Both Corsican pine and Pinus contorta seem better able to hold their foliage than the Scots when on the exposed south-west aspect, but Corsican is showing some tendency to blow.

Pinus contorta certainly gets away faster in its early years than either of the others and at Kennisham Hill it has really got away too fast to give the best nursing effect to the Sitka. On the top of Croydon Hill (Compartment 22) the young contorta is very promising though extensive damage by deer has occurred.

(d) Vegetation changes noted

The closure or partial closure of the pine canopy has brought about marked changes in the vegetation since the report of 1938.

Except in the poorest patches of pine, such as the P.38 spruce introduction area in Compartment 18 Calluna has been suppressed; and the bracken is far more widespread and dominant than in the past.

Gorse appears to stand the increasing shade of the pine canopy longer than Calluna, and Vaccinium is often vigorous after the heather has weakened.

In some of the rather damper sites Molinia has replaced Calluna beneath a light pine canopy.

Growth of Sitka spruce, pine, and in mixture with Scots pine.

It was remarked in the 1938 report that this Brendon series of introductions could provide little evidence on the nursing effects of pine, owing to the absence of comparable pure spruce. There is, however, a small area in Compartment 23 where the pines died out from some unknown cause at an early stage. The vegetation is Ulex, Calluna, and so far as can be ascertained, site conditions are reasonably homogeneous over an area extending into the surrounding pine crop. Sitka spruce was planted in 1937 throughout the area. The behaviour of the spruce is shown by the following figures:-

	<u>Mean height</u>	<u>Mean annual shoot</u>
Amongst pine	10. 7 ft.	15. 7 in.
In 'gap'	3. 5 ft.	6 in.

The observation is interesting, but inconclusive. On such a site, however, we can readily accept that pine is likely to have a considerable influence on the establishment of spruce.

Compartment 22 contains both pure spruce and spruce in mixture with Pinus contorta, both having been planted in 1943 near the top of the compartment. This area should be of interest for future observation.

Notes on particular compartments and recommendations
for future treatment.

Compartment 18, Scots pine, P.22 Sitka spruce P.32.

(Spruce 9 ft. x 9 ft. between the pine rows).

This is a small area not much over half an acre and on a rather better soil than usual in a slight depression.

In general the Sitka spruce is well into the upper canopy, except for a small strip along the east side where the pines were seven feet high in 1932, and the spruce are nearly all suppressed.

There are over 500 Class 'A' Sitka per acre and no immediate treatment is required except to free an occasional Class 'B' Sitka spruce from pine branches.

Compartment 18, Scots pine, P.22 Sitka spruce P.35.

(Spruce 9 ft. x 9 ft. between the pine rows).

Approximately one acre in extent this area needs further brashing and thinning of the Scots pine. There are only 76 Class 'A' Sitka spruce per acre and 104 Class 'B' and to give a reasonable stocking of spruce most of the Class 'B' trees should be encouraged by treatment of the pines.

Compartment 18, Scots pine, P.22 Sitka spruce P.38.

(Spruce 9 ft. x 9 ft. between the pine rows)

Another area of about one acre but the Scots pine here are very irregular and gappy with much dense heather in the open places.

The Sitka spruce are coming away quite well with 189 Class 'A' trees per acre and 109 Class 'B'.

Some further brashing of the pines is needed in places but it will only rarely be necessary to cut out pines to relieve the spruce.

Compartment 7, Scots pine, P.22 Sitka spruce P.33.

(Spruce 9 ft. x 9 ft. between the pine rows).

Over this quite large strip, about six acres in extent, the pines have mainly suppressed the spruces. There are only about 17 Class 'A' Sitka spruce per acre and 41 Class 'B'. The only practical treatment here is to thin the pine on its own merits, but to favour the 'A' and 'B' classes of Sitka. It may be that the pine thinning will enable some Class 'C' spruces to get into the upper canopy but good dominant pines should not be removed so

as to give what can only be a doubtful chance to a suppressed spruce.

This area would be very suitable for carrying out a small trial to test the recovery powers of the suppressed Sitka.

Compartment 7, Scots pine, P.22 Sitka spruce, P.34.

(Spruce 9 ft. x 9 ft. between the pine rows).

Rather under four acres, this block contains some 62 Class 'A' Sitka spruce per acre and 26 Class 'B' with 79% of the spruce crop suppressed.

As in the case of the P.33 Sitka spruce block in the same compartment the pines will have to be thinned on their own merits except where it is possible to favour 'A' or 'B' class spruces.

The Sitka spruce stocking here is decidedly better, however, than in the adjoining P.33 area and it may be possible to get 100 Sitka spruce per acre into the upper canopy.

Compartment 8, Scots pine, P.22 Sitka spruce, P.34.

(Spruce 9 ft. x 9 ft. between the pine rows).

This is the largest single block of pine-spruce and covers about nine acres. The Sitka spruce are rather better than the same years planting in Compartment 7, and give about 58 Class 'A' trees per acre and 57 Class 'B'.

The treatment should be the same as for Compartment 7.

Compartment 21, Scots pine, P.23 Sitka spruce, P.36

(Spruce 9 ft. x 9 ft. between the pine rows).

Between 1 and 1½ acres this unit lies mainly on the steep slope of Compartment 21, where the pines are very exposed and in many places canopy is not yet complete.

The Sitka spruce are very irregular but are mainly well away with nearly 300 Class 'A' trees per acre and 92 Class 'B'.

Very little treatment is yet needed except a little more pine branch trimming in a few places.

Compartment 23, Scots pine, P.23 Sitka spruce, P.36.

(Spruce 9 ft. x 9 ft. between pine rows)

About two acres and almost identical to the 9 ft. x 9 ft. lot of the same age in Compartment 21, except that there are rather fewer Class 'A' trees per acre (258) but more Class 'B' (156).

Treatment required - a little more pine branch trimming and an occasional pine cut out to encourage good Class 'B' spruces.

Compartment 21, Scots pine, P.23 Sitka spruce, P.38.

(Spruce 9 ft. x 9 ft. between the pine rows).

Approximately three acres with 190 Class 'A' and 124 Class 'B' Sitka spruce per acre. Very little attention required here. Occasional pines branch trimming needed and a few Class 'B' Sitka spruce relieved by cutting out pines, but near the bottom of the area the pines were too big when the Sitka spruce were introduced and should now be treated as a pure pine crop except where scattered Class 'A' spruce occur.

Compartment 21, Scots pine, P.23 Sitka spruce, P.38.

(Spruce in groups of three at planting points approximately 22½ ft. apart).

This area of about two acres compares directly with the adjoining block of the same year's planting but with the spruce in groups instead of rows, the plants being of the same origin and much of the ground very similar.

Each group of three spruce was very close planted, at 18 in. apart in a small triangle on a dug over patch about 30 in. square.

The 9 ft. x 9 ft. line planted spruces were turved in the normal way.

The extra cultivation given to the little groups has produced good results, and the mean height is 14.1 ft. as compared with 10.1 ft. for the single plant area. The advantage showed at an early age and three years after planting the groups had a mean height of 17.75 in. against 13.5 in. for the line planting.

There are only about 90 groups planted per acre and of these 60 have reached Class 'A' and twenty-six Class 'B'. This is an excellent result and it is a great pity that insufficient groups were put in to give a reasonable final crop stocking. There should have been at least 150, preferably rather more.

Little work is required other than branch trimming and the occasional cutting out of one or two Scots pine.

Compartment 23, Scots pine, P.23 Sitka spruce, P.37.

(Spruce in groups of three at planting points approximately 22½ ft. apart).

Approximately seven acres in extent, the crop here is very irregular both as regards pines and spruces. The Sitka spruce have given 31

Class 'A' and 17 Class 'B' trees per acre taken over the whole area but the result is much better on the higher ground where the pines are not so dense and poorest near the main ride where there has been a good deal of spruce suppression. Taking the top half of the ground there are approximately 65 Class 'A' Sitka spruce per acre.

A good deal more trimming up of Scots pine branches is required in some places and it may be worth while to cut out a few more pines to help Class 'B' plants into Class 'A'.

Compartment 19, Scots pine, P.23 Sitka spruce, P.39.

(Spruce 9 ft. x 9 ft. between the pine rows).

In this block of approximately five acres the Sitka spruce are very irregular and their heights appear to vary inversely with the height of the Scots pine at the time of introduction. Wherever the pine were over 6 ft. high in P.39 then patches of spruce have been suppressed.

There are now 141 Class 'A' and 123 Class 'B' Sitka spruce per acre. More pine branch trimming is required in places and it would be worth while to cut out a number of pines to relieve the better Class 'B' spruces.

Compartment 19, Scots pine, P.23 Sitka spruce, P.39.

(Spruce in groups of three at planting points approximately $22\frac{1}{2}$ ft. apart).

Being a similar site with plants of the same origin this area of four acres compares well with the 9 ft. x 9 ft. spruce planting adjoining.

There is not the same difference here as in the similar comparison in the P.36 planting but the groups are still slightly better than the lines in height growth, averaging 9.6 ft. against 9.1 ft.

The groups now show only 51 surviving points per acre and of these 29 are Class 'A' trees and 11 Class 'B'.

Some more pine branch trimming and thinning will be needed.

Compartment 19, Scots pine, P.23 Sitka spruce, P.40.

(Spruce 9 ft. x 9 ft. between the pine rows)

A large area of about six acres now having 112 Class 'A' and 112 Class 'B' Sitka spruce per acre. Over much of the area especially on the lower ground near the main ride, the pines were too large in 1940, often being between six and eight feet high, and much spruce suppression has resulted. In this lower area most of the Sitka spruce may be disregarded and the pines

thinned on their own merits, but higher up the stocking of Sitka spruce is far better and many Class 'B' plants should be encouraged by more branch trimming and occasional cutting out of the pines.

Compartment 19, Scots pine and Corsican pine, P.23 Sitka spruce P.41.
(Spruce introduced only into gaps in the pines)

This area is not comparable with the 'regular' introductions. The only treatment required will be the thinning out of the pines round the edges of the spruce groups where required. The main pine blocks will of course be thinned on their own merits.

Compartment 3, Scots pine and Corsican pine P.21, Norway spruce and Sitka spruce P.33.

This is a relatively large area of probably more than six acres, and is not comparable with any of the other pine-spruce crops because it is an irregular mixture of Scots pine, Sitka spruce and Norway spruce with occasional Corsican pine.

The spruces sometimes occur in small pure groups but were usually introduced in lines between the pines. There are more Norway than Sitka spruce.

The whole crop is quite irregular and must be treated locally on its merits. Most of the Sitka spruce are along the southern edge of the strip.

In some places there are excellent spruce well up with the pine and averaging over 25 ft. high - in parts over 30 ft. - while elsewhere there is a fine pine crop of 35 ft. high with scattered suppressed spruce, mainly Norway, only averaging about 6 ft.- 8 ft.

Over at least half the area it will be possible to maintain an interesting pine-spruce mixture and thinning of the pine should be directed towards this except in those places where the spruce are definitely suppressed.

Much of the pine, especially at the western end of the strip, has been marked already for thinning by the Conservancy. Table IV gives some figures for this crop.

Kennisham Hill, Compartment 56.

The original P.28 crop was burnt and the area replanted on turves with a one row Pinus contorta - 2 row Sitka spruce mixture in P.37.

This is a most interesting crop which has reached a stage when a decision on the treatment of the pines is essential.

The spacing is 5 ft. for both species. Owing to slope and exposure the pines have a wide branch development on the north eastern side and a narrower one in the opposite direction. This means that one row of Sitka spruce in each pair is more liable to suppression than the other, and even with heavy cutting back of the pine branches it will not be possible to get very many Sitka spruce away in the most closely pressed rows.

Height growth of the two species is as follows:-

Pinus contorta

Height range 10 ft. - 30 ft. averaging 20 ft. in lower half of area,
16 ft. in upper half.

Shoot range 6 in. - 38 in. averaging 18 in. in lower half of area,
15 in. in upper half.

Sitka spruce

Height range 6 ft. - 22 ft. averaging 15 ft. in lower half of area,
6 ft. in upper area.

Shoot range 6 in. - 45 in. averaging 24 in. in lower half of area,
15 in. in upper area.

These figures for the Sitka spruce refer to the better rows of each pair.

A certain amount of very rough cutting back of the pine branches has been done leaving long snags on the main stems - this seems a pity because the contorta is a good straight type and well worth consideration as a component of the crop.

Three alternative treatments suggest themselves here:-

(1) If the mixture is left to go as it is except for branch pruning in the pines it will be safe to assume that approximately half the Sitka spruce will get into the upper canopy - i.e. about 500 per acre together with a large number (probably at least 250) pines.

(2) If the pines are all cut out now it may well check the Sitka spruce somewhat and rather heavy branching may be expected on the edges of the 10 ft. gap so caused.

(3) If 50% of the pines are cut out now and the remainder branch trimmed as necessary it would probably increase the stocking of spruce per acre to 750 but the remaining pines would be coarser branched.

In view of the good type of Pinus contorta represented here, and the desirability of retaining a mixture as long as possible it would probably be best to use method (1) in places where the Sitka spruce are decidedly vigorous and method (3) where the Sitka spruce are poorer (usually in the upper half of the area); but if say 300 spruce per acre be considered adequate stocking, method (1) might be successful over the whole area because the spruce shoots are increasing each year and the pine shoots are not. An important point in favour of holding pines is that their present value is small, and in a few years will be much greater.

R. F. W.
M. N.

October, 1951.

S U M M A R Y

- (1) The present report follows previous reports on the pine/spruce mixtures at Brendon dated 1938, and 1940, to which reference should be made for general description of the forest.
- (2) The status and prospects of the Sitka spruce in the various compartments have been investigated, and an attempt made to define the initial conditions in the pine crops under which the largest numbers of spruce have won their way into the canopy.
- (3) These conditions appear to be met (a) where Scots pine did not greatly exceed $5\frac{1}{2}$ ft. in height at the time of introduction of the spruce and (b) where the subsequent growth of the pines has been relatively slow in comparison with that of the Sitka spruce.
- (4) Wide soil variations have no doubt influenced the growth of both species, it appears that exposure has had a general retarding effect on the height growth of Scots pine, and relatively less effect on that of Sitka spruce. Hence the most successful introductions are to be found on the most exposed sites with a westerly aspect.
- (5) The small, cultivated, groups of three spruce at $22\frac{1}{2}$ ft. spacing compare favourably with the more widely used turf plantings as regards the development of the spruce.
- (6) The Pinus contorta/Sitka spruce mixture on Kennisham Hill provides a good example of the difficulties to be met with in manipulating a one row/two row pine/spruce mixture.
- (7) Notes on individual compartments and crops are given, together with recommendations for future treatment. Recommendations are based on the assumption that it is desired to get as much spruce into the upper canopy as possible, bearing in mind the undesirability of removing vigorous pine to favour hopelessly dominated spruce.

There is, however, in many compartments much vigorous spruce a little below the upper canopy, which is now growing faster than the pine, and which can be favoured without very drastic treatment, provided such treatment is undertaken at an early date.

TABLE III

Croydon Hill, Pine-Spruce Mixtures. Summary of Assessment 1951

Compt. No.	Aspect	Year of planting		Method of introducing S.S.	Heights of pine at time of introduction		Mean ht. of S.S. 1951	Total of S.S. per acre 1951	Class A. S.S. 1951			Class B. S.S. 1951			Remarks				
		S.P.	S.S.		Mean	Average of dominants			Means for pine 1951	Mean ht. of S.S. 1951	No. per acre	% per acre	Means	No. per acre		% per acre	Means		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
18	N.E.	P. 22	P. 32	9 ft. x 9 ft. between pines plus some groups of pure S.S.	3.0	5.0	20.3	12.1	16.2	765	514	71.3	18.4	18.3	33	4.6	16.3	15.0	Not typical Croydon Hill ground. A slight depression and damper than usual. Pines mainly died out in centre of area there S.S. are so good.
18	"	P. 22	P. 35	9 ft. x 9 ft. between pines.	4.0	7.0	16.7	9.2	10.3	564	76	13.5	14.1	19.5	104	18.4	11.9	11.9	In many places the pines were over 7 ft. high in 1935 and the spruce are suppressed.
18	"	P. 22	P. 38	9 ft. x 9 ft. between pines.	3.0	4.5	11.5	7.9	7.9	349	189	54.1	9.5	16.2	109	31.1	6.9	11.6	Fines are very gappy and many of the spruce still in long heather but now growing well.
7	"	P. 22	P. 33	"	4.0	6.0	22.9	13.1	8.6	358	17	4.5	16.7	25.3	41	10.8	12.6	16.0	In many places pines were over 6 ft. high in 1933 & most of the spruce are suppressed.
7	"	P. 22	P. 34	"	3.5	6.0	22.8	14.4	8.0	425	62	14.6	14.7	17.6	26	6.1	8.7	9.6	In many places pines were over 6 ft. high in 1934 most of the spruce are suppressed.
8	"	P. 22	P. 34	"	3.5	6.0	24.8	12.7	10.8	305	58	19.0	17.5	19.7	57	18.6	11.6	10.5	Remarks as for Compartment 7. P. 34 spruce above.
21	W. S. W	P. 23	P. 36	"	3.1	4.0	12.8	9.0	10.5	438	296	67.6	11.9	16.5	92	21.0	8.6	12.6	Mainly on exposed S.W. to W. aspect. Fines rather poor.
21	"	P. 23	P. 38	"	3.75	5.5	15.5	9.6	10.1	393	190	48.2	12.3	19.4	124	31.6	8.6	12.2	Pines were too large when S.S. were put in on the lower edge of the area.
21	"	P. 25	P. 38	Groups of 3 at approx. 22½ ft. spacing.	3.0	4.0	14.5	11.4	14.1	89	60	67.4	14.7	23.6	26	29.2	13.5	20.0	Pines irregular and often poor. Exposed to S.W.
23	S.W.	P. 23	P. 36	9 ft. x 9 ft. between pines.	3.0	4.0	15.5	12.1	10.9	475	258	54.4	13.3	17.2	156	32.8	8.0	12.1	Same as on line above.
23	"	P. 23	P. 37	Groups of 3 at approx. 22½ ft. spacing.	3.0	5.5	16.6	10.4	11.8	69	31	44.2	14.5	20.4	17	24.6	10.1	15.1	On lower side near ride pines have suppressed S.S.
19	W	P. 23	P. 39	Groups of 3 at approx. 22½ ft. spacing.	3.5	6.5	15.9	10.2	9.6	51	29	56.8	10.7	18.3	11	21.6	9.1	14.3	Pines were often 7 ft. high at time spruce were put in along lower edge.
19	"	P. 23	P. 39	9 ft. x 9 ft. between pines.	3.5	6.5	14.2	9.0	9.1	354	141	39.7	11.4	20.0	123	34.7	7.9	12.6	As for P. 39 groups on line above.
19	"	P. 23	P. 40	"	4.75	7.0	16.4	10.6	9.0	325	112	34.5	11.3	21.4	112	34.5	8.6	15.0	Pines were over 6 ft. high on all the lower part of the area when S.S. were put in.

TABLE IV

Croydon Hill, Compartment 3 - Summary of Assessment 1951

(Northerly aspect)

Species	Year of Planting	Means for 1951		Class A. for 1951			Class B. for 1951		
		Height ft.	Shoot in.	%	Height ft.	Shoot in.	%	Height ft.	Shoot in.
S.P.	P. 21	24.4	15.1						
S.S.	P. 33	13.8	11.9	26.0	22.2	30.2	19.2	14.5	14.4
N.S.	P. 33	20.3	13.5	52.0	26.0	20.3	12.0	18.9	13.2

Conclusions

A large proportion of the area is maiden land, viz:- dry and exposed moorland, and our plantings are therefore pioneer crops. The old woodland sites are a different proposition and are comparatively easy to re-afforest.

The conclusions drawn are summed up as follows:-

Preparation of Ground

Doubtless nowadays we should certainly do a great deal more ploughing, which would effect establishment more quickly and encourage better growth.

Choice of Species

This of course is one of the most important factors. Scots pine so largely used (unavoidably) in the past, has proved unsuitable as a pure crop on the moorlands, especially on ground above the 900 ft. contour.

Corsican pine would be much more suitable, and could be used in conjunction with Sitka spruce or Pinus contorta.

Douglas fir has been planted at too high an altitude and should not be used except in the coombes and lower slopes.

A much larger area of the old woodlands would be better planted with hardwoods, particularly beech. European larch should be studiously avoided, except as a sporadic mixture with beech.

Possibly the land over 1000 ft. altitude on the Calluna-Ulex moorland would not be profitable to afforest.

Future Treatment

A large proportion of the Scots pine and the mixed Scots pine/Corsican pine areas over the 1000 ft. contour should be reconditioned. The removal of a proportion of the rows would enable ploughing to be done, and a more suitable species introduced.

Alternatively a thin overcrop of pines could be left, and another species planted, which would have the advantages of the shelter thus afforded.

The very poor European larch areas should have the poorest trees removed, and the groups thus created planted with more suitable species.

The "accepted" coppice areas to be stored and the crop trees pruned where necessary.

With the large areas of backward plantations, the fire protection must play a vital part.

History of Brendon Forest

APPENDIX I

Notes from Inspection Reports

Chairman's visit of 31.8.32

Croydon Hill

After passing through an area of P.21 Scots pine showing the effect of blast, the small experimental area in which mounded Sitka spruce was interplanted in Scots pine was visited.

It was subsequently decided that the method to be adopted to make good the plantations of Scots pine formed in P.21 and P.22, should be by interplanting with Sitka spruce on mounds, in exactly the same way as was done experimentally in Compartment 18. The worst areas should be done first, but as far as practicable, the work should be carried from the lower elevations upwards.

If need be this interplanting may be carried into the P.23 areas, originally planted with 3 Scots pine to 1 Corsican pine, but in the meantime there appears to be sufficient plants per acre.

In the pure Corsican pine at higher elevations there seems no need to do any filling up.

Chairman's minute of 31/8/32

Croydon Hill which was one of our earlier plantations does us no credit. The work was carried out on too large a scale and without making proper use of the evidence available in existing plantations in the district.

I think that by interplanting Sitka among the Scots pine we may yet get a crop on all except the worst ground. We should proceed slowly to begin with and speed up later if justified by results.

Kinnisham Hill P.28 - I was not very satisfied with this area which has now 5 years growth and still requires extensive beating up.

Chairman's visit of 17-19th August 1937.

Interplanting of F.Y.37

The Chairman considered that the results obtained by the 9 ft. x 9 ft.

spacing were better than this group method, and in summing up the merits of each method mentioned the following :-

The group method did not give such a good distribution of Sitka spruce through the area, as did the 9 ft. x 9 ft. work, nor did the plants benefit to the same extent from the shelter and shade of the existing crop; against this the work of weeding and bringing the Sitka spruce into the crop would probably be less, and if we accepted one death in each group beating up would largely be cut out.

The Chairman considered that the question of interplanting required still further investigation as to methods and results, and wished a further area of 5 acres dealt with in the ensuing season, and that both the 9 ft. x 9 ft. and groups should be tried on this 5 acres. In carrying out this work costs are to be kept for each method, areas of thrifty pines will be passed over, and where pines are missing the gaps will be made good with Sitka spruce.

Report on visit 20.8.41

Chairman's comments

The Scots pine and other species on Croydon Hill have developed considerably since my last inspection and although much cannot be expected of Scots pine on the upper parts of the hill a utilisable crop should result over the greater part. Corsican pine is noticeably better than Scots pine and if by treatment (i.e. ploughing) the initial check could be cut quite reasonable crops should result.

The interplanting of poor Scots pine with Sitka spruce is very interesting and should be kept under review by the Research Branch.

With our recent improvements in technique we should now be able to make a satisfactory job of such places as Kennisham and Lype.

Report on visit of 31.3.51

Chairman

The Forest has developed well since I saw it last. The most difficult part has always been Croydon Hill. I remarked, following my visit of 1941, that the Scots pine, even on the poorest parts, had made better progress than their early development held out. I was particularly interested to see the interplanting with Sitka spruce carried out by Mr. Scott and I

asked Mr. Guillebaud in my minute of 20/9/41 on file (288/29) to keep the work under review. The Sitka have undoubtedly shown reasonable development, but owing to their disposition on the ground and the unexpectedly good development of the Scots pine, most of them will be lost unless something is done to admit more light to them. I think this should be done to selected parts, as the experiment is of importance. The time in fact has come when a further inspection and report, with recommendations, is due from the Research Branch.

History of Brendon Forest

APPENDIX II

Supervision

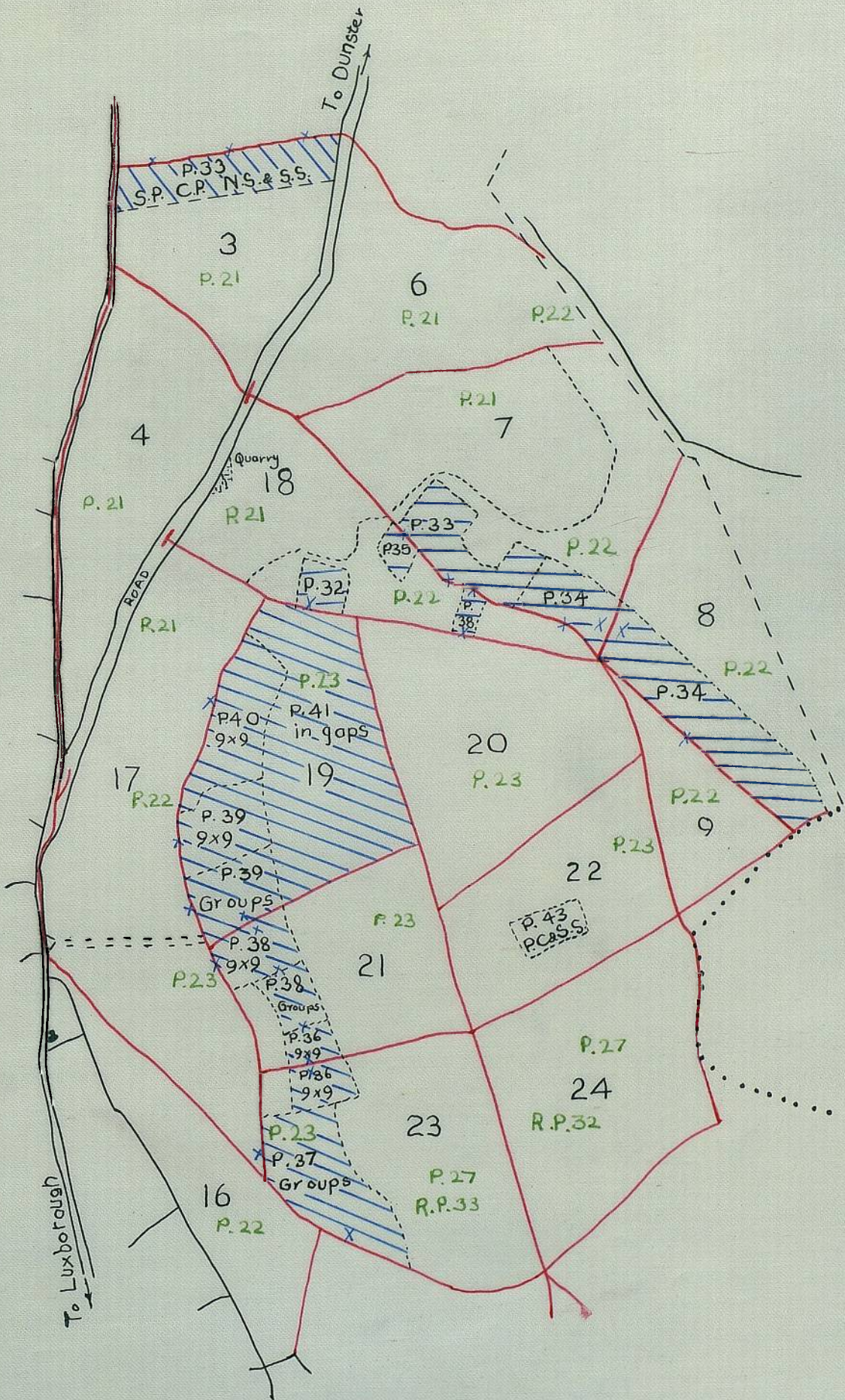
Divisional Officer	Mr. C. O. Hanson	1920-1931
"	Mr. F. Scott	
" (D. A. O.)	Mr. R.G. Broadwood	
" "	Mr. R. H. Smith	
" "	Mr. J.E. James	
Conservator	Mr. A.H. Popert	1946 to date
State Forest Officer	Mr. G.F. Ballance	1946 to 1949
" " "	Mr. J. B. Stocks	1949 to date
District Officers	Mr. G. Lowe	1920 to 1926
" "	Mr. W.D. Russell	1926 to 1934
" "	Mr. R.G. Broadwood	
" "	Mr. G.F. Ballance	
" "	Mr. D.N. Williams	1946 to date
Foresters	Mr. D.N. Williams	1921 to 1930
"	Mr. Crighton	
"	Mr. R.E. Pallett	
"	Mr. J. Williams	
"	Mr. F.B.K. Purser	
"	Mr. T.C. Bowdler	1946 to date

Brendon

BRENDON FOREST.

CROYDON HILL.

Map showing Spruce interplanted areas - hatched blue.



X Indicates notice board.
Scale: 6 inches = 1 mile.

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 H.M. Forestry Commission

H.M. Forestry Commission

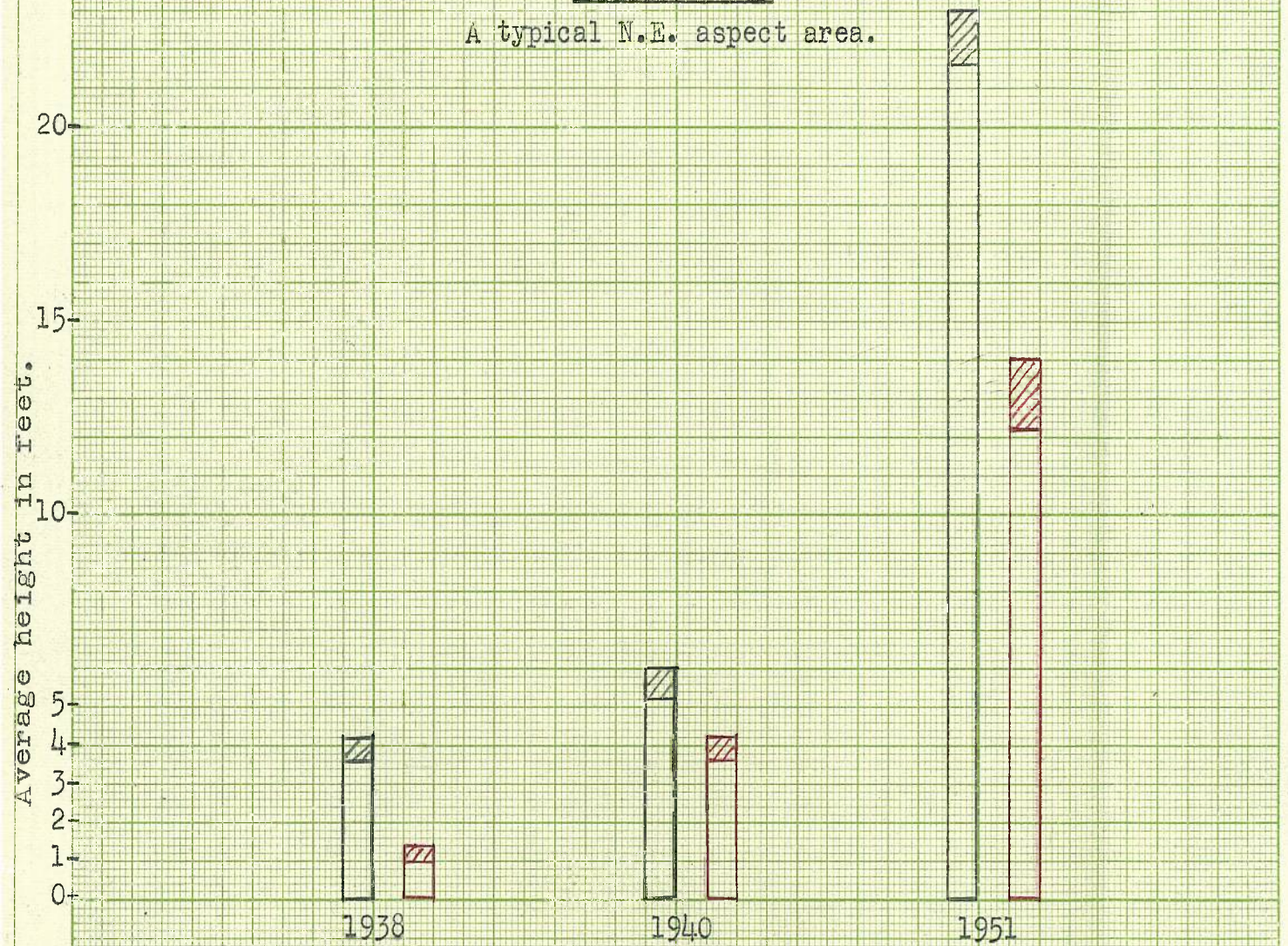
CROYDON HILL - PINE-SPRUCE MIXTURES

Columnar diagram showing relative development of Scots Pine & Sitka Spruce.
S.P. shown in black: S.S. shown in red: Current annual shoot growth hatched in.

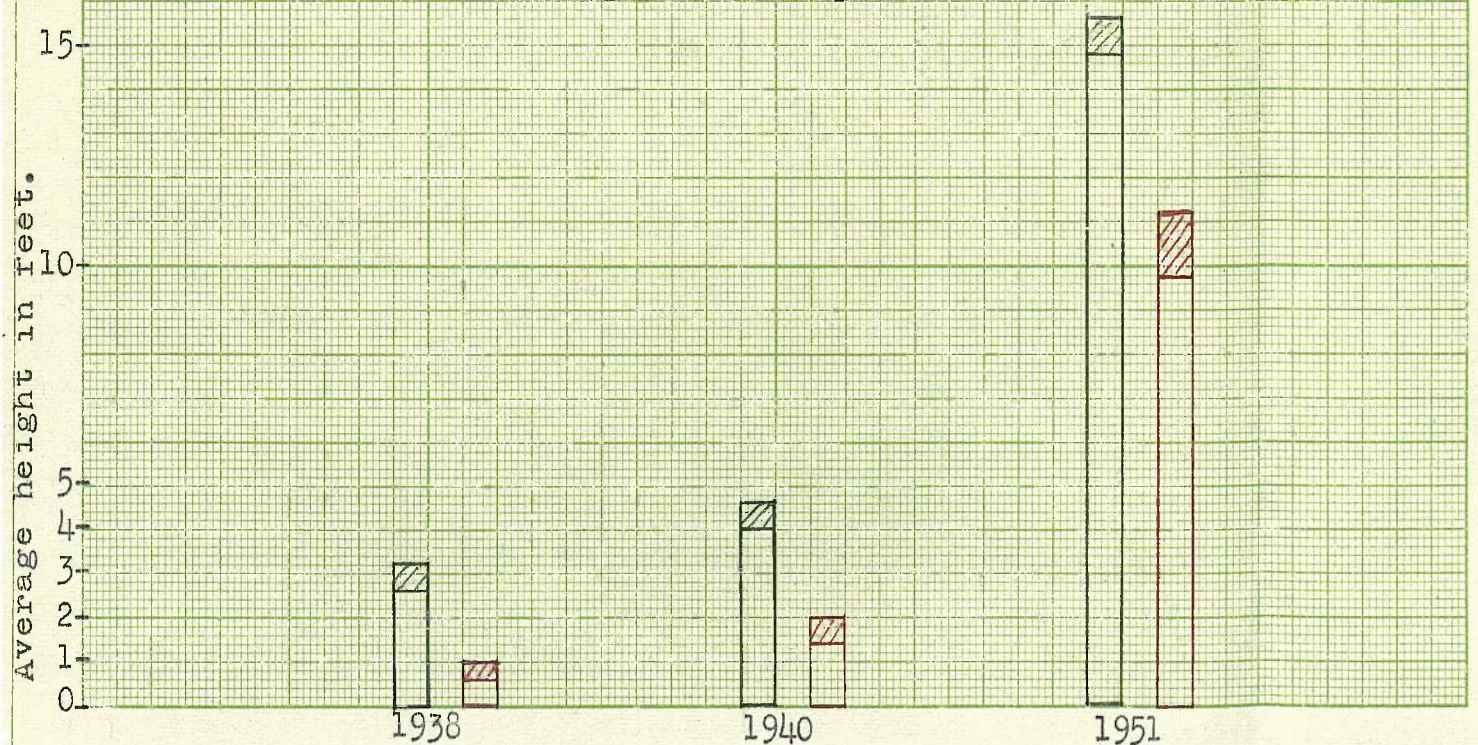
Note: The 1951 S.S. data does not include completely suppressed trees.

Compartment 7

A typical N.E. aspect area.

Compartment 21

A typical S.W. aspect area.





Compt.	3
Species	C.P.
Age	P. 22
Diam. B.H.	6 1/2"
Tree Ht. Max.	50'
Tree Ht. av.	40'
Vol. av. pole c/f	4' 3"
Vol. per acre	3000 cu. ft.
Remarks:	A good typical stand of pure C.P. on the lower levels of Croydon Hill.

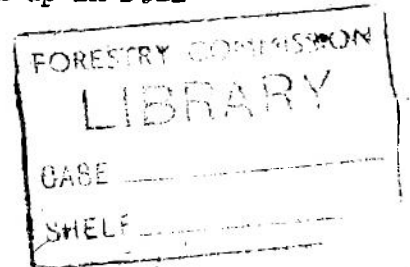
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BRENDON

①



Compt.	4
Species	J.L.
Age	P.21
Diam. B.H.	7½"
Tree Ht. max	75'
Tree Ht. av.	55'
Vol. av. pole	10 cu. ft.
Vol. per acre	4,000 cu. ft.
Remarks	J.L. at 800' altitude and very exposed to the S.W. Heavily beaten up in P.22



BRENDON



Compt.
Species
Age
Diam. B.H.
Tree Ht. max.
Tree Ht. av.
Vol. av. pole
Vol. per acre
Remarks:

5
S.S.
P.27
8"
79'
65'
10 cu. ft.
4,000 cu. ft.

FORESTRY COMMISSION
L.S. BY
CASE _____
SHELF _____

BRENDON

The largest tree at Brendon, planted by the F.C. Its demen&ions at present are:- Height - 79' & Q.G. (B.H.) - 12 $\frac{1}{4}$ ". This S.S. was planted in a shallow combe, where J.L. failed owing to swampy conditions.



Compt.
Species
Age
Remarks

7

S.P. with interplanted S.S.
S.S. P.22

A typical stand of S.P. which was inter-planted with S.S. in P.33. The S.P. recovered beyond expectations, and the photograph shows the S.S. almost completely suppressed. The S.S. was planted 9' x 9' between the Pines.

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LIBRARY	
CASE	_____
NO.	_____

BRENDON



Compt.	15
Species	S.P.
Age	P.22
Diam. B.H.	6"
Tree Ht. max	50'
Tree Ht. av.	40'
Vol. aver. pole	5 cu. ft.
vol. per acre	3,000 cu. ft.

Remarks:

A typical stand of good S.P. pure, at 1050 altitude, fully exposed to the S.W. Originally planted on fairly good soil, carrying a fair bracken crop.

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CASE	_____
SHelf	_____

BRENDON



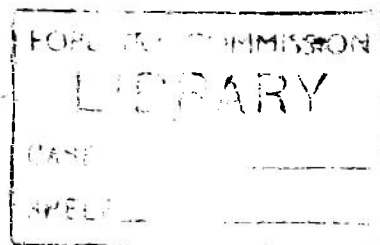
Compt. 19
Species S.P. & C.P.(3 S.P. to 1 C.P.) with interplanted
S.S.
Age P.23
Remarks: S.P. & C.P. at 1000' altitude fully exposed to
the W, planted on poor Calluna/Ulex area.
Interplanted with S.S. in P.40 at 9' x 9'
between the Pines. Photograph shows good
development of the S.S.

FOR THE COMMISSION
LIBRARY
CASE _____
SHELF _____

BRENDON



Compt.	23
Species	S.P. & C.P. (3 S.P. to 1 C.P.) with inter-planted S.S.
Age	P.23
Remarks	S.P. & C.P. at 1000' altitude fully exposed to the S.W., planted on poor Calluna/Ulex area. Interplanted with S.S. in P.37 in small groups of 3 at 22 $\frac{1}{2}$ ft. spacing between the groups. Photograph shows reasonable development of the S.S.



BRENDON



Compt, 24. Species S.P. & C.P. (3 S.P. to 1 C.P.) Age P.23
Remarks: A typical stand of blasted S.P. and C.P. at 1150' altitude, with a severe N.E. exposure.
Originally planted on a very poor Calluna/Ulex area.

BRENDON

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Compt.
Species
Age
Remarks

25
P.C.
P.31
A typical stand of P.C. planted at 1250'
altitude, with a severe N. exposure.
Planted on Calluna/Ulex area.

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DATE _____

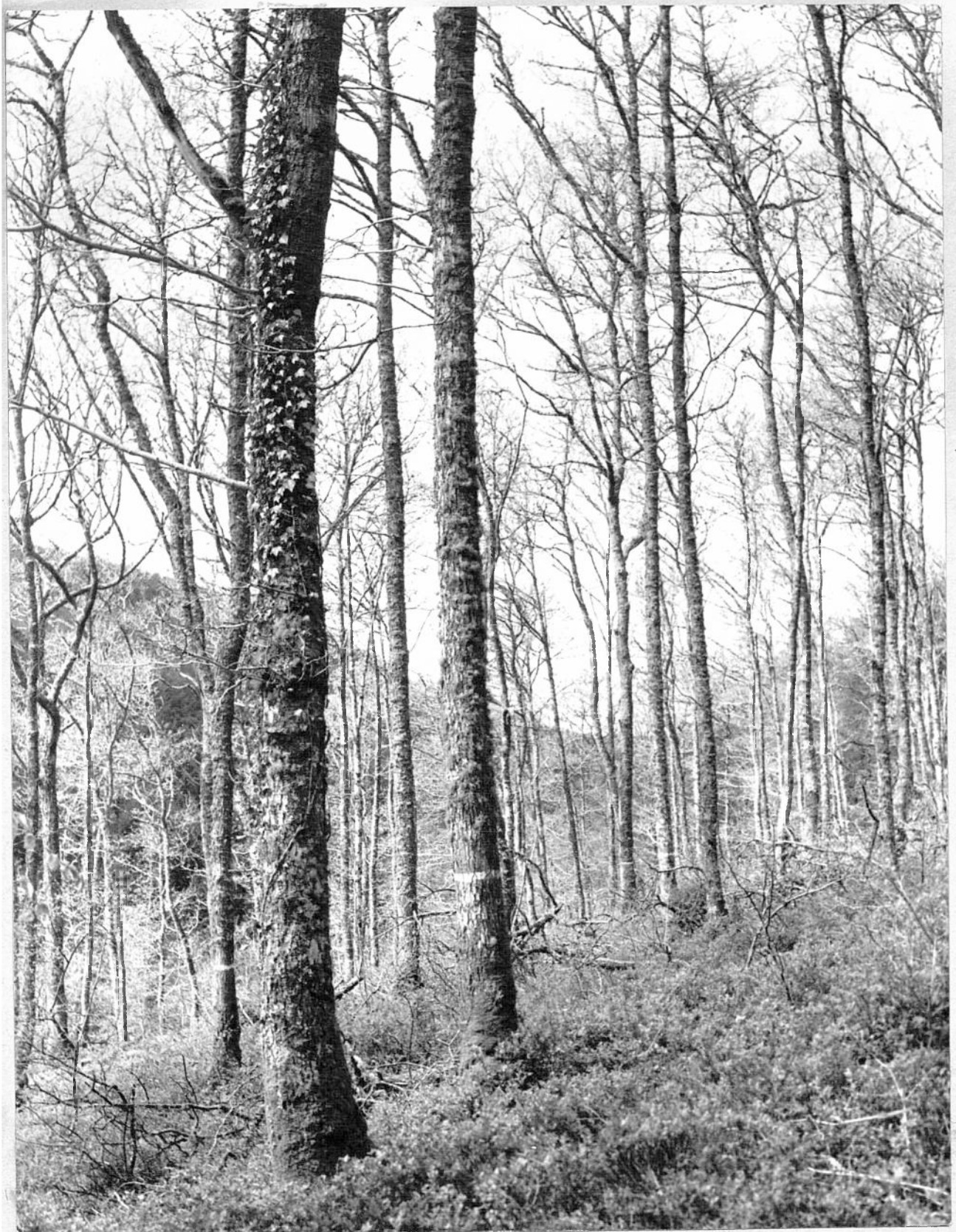
BRENDON



Compt. 39. N.S. Age P.28. Diam. B.H. 5" Tree Ht. max. 43' Tree Ht. av. 35'
Vol. av. pole 2 cu. ft. 6 ins. Vol. per acre 2500 cu. ft.
Remarks: N.S. planted at 1200' altitude with a N.E. exposure, on a Bracken/grass area.

BRENDON

FORESTRY COMMISSION
LIBRARY
CASE _____
SHELF _____



Compt.	45
Species	Oak
Age	P.02
Diam. B.H.	8"
Tree Ht. max.	60'
Tree Ht. av.	55'
Vol. av. pole	15 cu. ft.
Vol. per acre	3000 cu. ft.
Remarks	

Photograph shows the conversion of Oak coppice to High Forest. The coppice is reasonably good and is grown on a "Shillet" type of soil on the Upper Old Red Standstone of the Brendon Hills.

FORESTRY COMMISSION
LIBRARY
CASE
BHEL

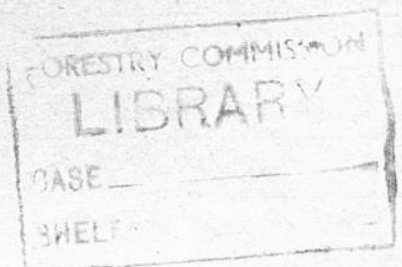
BRENDON

12



Compt.
Species
Age
Remarks

47
N.S. and Ts.
N.S. P.33
N.S. P.33 in a very sheltered area of
Chargot Wood, beaten-up with Tsuga in P.39.



BRENDON

(3)



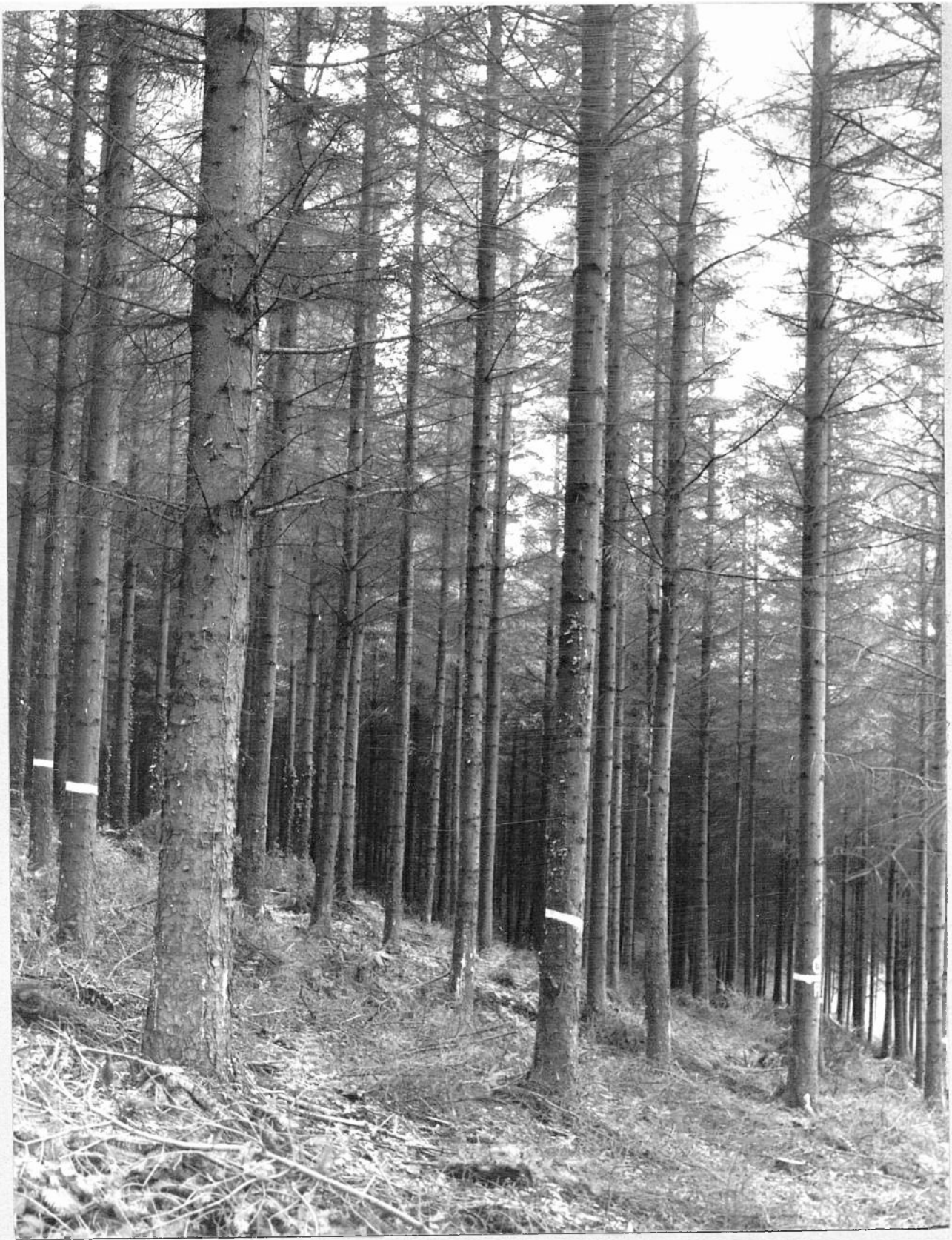
Compt.
Species
Age
Remarks:

54
E.L. with interplanted S.S P.41
P.28

A very poor crop of E.L. at 1100'
altitude, interplanted with S.S. in P.41
at 9' x 6'. The subsequent plantation will
consist of a thin crop of fairly good Larch,
the remainder being S.S., about 75%.
The S.S. is doing very well.



BRENDON



Compt.
 Species
 Age
 Diam. B.H.
 Tree Ht. max.
 Tree Ht. av.
 Vol. av. pole
 Vol. per acre
 Remarks

65
 S.S.
 P.12
 8"
 107'
 95'
 14 cu. ft. 4 ins.
 5000 cu. ft.

FORESTRY COMMISSION	
LIBRARY	
CASE	_____
SHELF	_____

An acquired plantation, showing remarkably good growth. Originally planted very closely, and taken over by the Forestry Commission in 1936.

BRENDON

BRENDON FOREST

1
Compt. 3
Species C.P
Age P.22
Diam. B.H 6 ½"
Tree Ht. Max. 50'
Tree Ht. av. 40'
Vol. per acre 4' 3"
Remarks: A good typical stand of pure C.P on the lower levels of Croydon Hill

2
Compt 4
Species J.L.
Age P.21
Diam. B.H 7 ½"
Tree Ht. Max. 75'
Tree Ht. av. 55'
Vol. av. Pole 10 cu. ft.
Vol. per acre 4000 cu. ft.
Remarks: J.L at 800' altitude and very exposed to the S.W. Heavily beaten up in P.22

3
Compt 5
Species S.S.
Age P.27
Diam. B.H 8"
Tree Ht. Max. 79'
Tree Ht. av. 65'
Vol. av. Pole 10 cu. ft.
Vol. per acre 4000 cu. ft.
Remarks: The largest tree at Brendon, planted by the F.C. Its dimensions at present are:- Height - 79' & Q.G. (B.H.) - 12 ¼". This S.S. was planted in a shallow combe, where J.L. failed owing to swampy conditions.

4
Compt 7
Species S.P. with inter-planted S.S.
Age S.S. P.22
Remarks: A typical stand of S.P. which was inter-planted with S.S. in P.33. The S.P. recovered beyond expectations, and the photograph shows the S.S. almost completely suppressed. The S.S. was planted 9' x 9' between the pines.

5
Compt 15
Species S.P.
Age P.22
Diam. B.H 6"
Tree Ht. Max. 50'
Tree Ht. av. 40'
Vol. av. Pole 5 cu. ft.
Vol. per acre 3000 cu. ft.
Remarks: A typical stand of good S.P. pure, at 1050 altitude, fully exposed to the S.W. Originally planted on fairly goo soil, carrying a fair bracken crop.

6
Compt 19
Species S.P & C.P. (3 S.P. to 1 C.P.) with inter-planted S.S.
Age P.23
Remarks: S.P. & C.P. at 1000' altitude fully exposed to the W, planted on poor Calluna/Ulex area. Inter-planted with S.S. in P.40 at 9' x 9' between the pines. Photograph shows good development of the S.S

7
Compt 23
Species S.P. & C.P. (3 S.P. to 1 C.P.) with inter-planted S.S.
Age P.23
Remarks: S.P & C.P at 1000' altitude fully exposed to the S.W, planted on poor Calluna/Ulex area. Inter-planted with S.S. in P.37 in small groups of 3 at 22 ½ ft. spacing between the groups. Photograph shows reasonable development of the S.S

8
Compt 24
Species S.P. & C.P. (3 S.P. to 1 C.P.)
Age P.23
Remarks: A typical stand of blasted S.P. and C.P. at 1150' altitude, with a severe N.E. exposure. Originally planted on a very poor Calluna/ Ulex area.

9
Compt 25
Species P.C.
Age P.31
Remarks: A typical stand of P.C. planted at 1250' altitude, with a severe N. exposure. Planted on Calluna/Ulex area.

10
Compt 28
Species S.S.
Age P. 29
Diam. B.H 6"
Tree Ht. Max. 50'
Tree Ht. av. 35'
Vol. av. Pole 2 cu. ft. 6 ins.
Vol. per acre 25000 cu. ft.
Remarks: S.S. planted at 1100' altitude with a S.W. exposure. Planted on Calluna Molinia

11
Compt 39 N.S.
Age P.28
Diam. B.H 5"
Tree Ht. Max. 43'
Tree Ht. av. 35'
Vol. av. Pole 2 cu. ft. 6 ins
Vol. per acre 2500 cu. ft.
Remarks: N.S. planted at 1200' altitude with an N.E. exposure, on a bracken/ grass area

12
Compt 45
Species Oak
Age P.02
Diam. B.H 8"
Tree Ht. Max. 60'
Tree Ht. av. 55'
Vol. av. Pole 15 cu. ft.
Vol. per acre 3000 cu. ft
Remarks: Photograph shows the conversion of oak coppice to high forest. The coppice is reasonably good and is grown on a "Shillet" type of soil on the Upper Old Red Standstone of the Brendon Hills

13
Compt 47
Species N.S. and Ts.
Age N.S. P.33
Remarks: N.S. P.33 in a very sheltered area of the Chargot Wood, beaten up with Tsuga in P.39

14
Compt 54
Species E.L. with inter-planted S.S. P.41
Age P.28
Remarks: A very poor crop of E.L. at 1100' altitude, inter-planted with S.S. in P.41 at 9' x 6'. The subsequent plantation will consist of a thin crop of fairly good Larch, the remainder being S.S., about 75%. The S.S. is doing very well.

15
Compt 65
Species S.S.
Age P.12
Diam. B.H 8"
Tree Ht. Max. 107'
Tree Ht. av. 95'
Vol. av. Pole 14 cu. ft. 4 ins.
Vol. per acre 5000 cu. ft.
Remarks: An acquired plantation, showing remarkably good growth. Originally planted very closely, and taken over by the Forestry Commission in 1936.

BRENDON

BASED ON SURVEY 28.3.1939

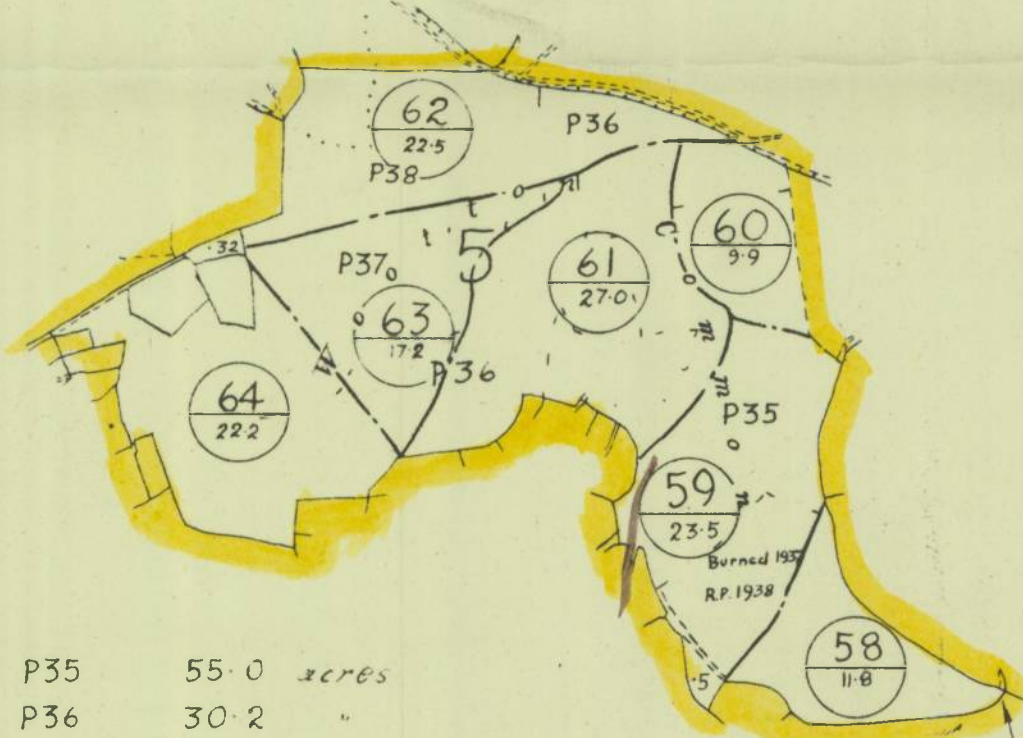
Somerset 35-SW 46-SE 47-W

1	Lease from A.F. Letterell 29-9-20 for 999 years	789.099 acres
2	Purchase from Mrs Shoppe 30-1-25	265.937
3	Lease from Sir W.J. Trevelyan 24-6-25 for 999 years	165.099
4	Purchase from W.P. Cross 31-3-26	799.712
5	J. Reed 9-5-31	134.120
6	J. Moles 25-3-36	36.350
7	W.T. Scott 2-11-38	250
Total		2,190.567

Acquired Plantations 59.9 acres
 Planted by F.C.
 Accepted Coppice 24.7

P Year	Planted	Total to Date
21	222.9	222.9
22	185.2	408.1
23	114.1	522.2
24	31.7	553.9
25	49.1	603.0
26	98.4	701.4
27	130.9	832.3
28	193.2	1025.5
29	126.2	1151.7
30	101.3	1253.0
31	105.1	1358.1
32	87.4	1445.5
33	84.0	1529.5
34	47.9	1577.4
35	49.0	1626.4
36	51.8	1678.2
37	44.1	1722.3
38	47.6	1769.9
39	15.9	1785.8
40	NIL	1785.8
41	18.0	1803.8
42	3.0	1806.8
43	2.0	1808.8
44	NIL	1808.8
45	NIL	1808.8
46	16.5	1825.3

Somerset 34-SE



P35	55.0 acres
P36	30.2
P37	31.1
P38	17.0
Unplanted	82
Total	134.12

Approx. 1/4 Miles NW of point A

Forest Boundary.

Council Roads.

Existing Main Roads.

Existing Feeder Roads.

Existing Tracks.

Proposed Main Roads.

Proposed Feeder Roads.

Proposed Tracks.

Rights at Way.

Waterways.

Forest Holdings.

Scale Six Inches to One Mile.

LIBRARY
I.F.No.
H.M. Forestry Commission