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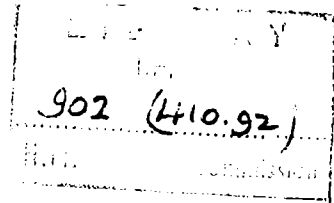
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HISTORY  
OF  
DARTMOOR

FOREST  
SW(CE) CONSERVANCY

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FORESTRY                      COMMISSION

HISTORY

of

DARTMOOR                      FOREST

1931 - 1951

SOUTH WEST (ENGLAND) CONSERVANCY

## HISTORY OF DARTMOOR FOREST

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## HISTORY OF DARTMOOR FOREST

1931 - 1951

### GENERAL DESCRIPTION OF THE FOREST

#### Situation and Name

The Forest lies on the eastern side of, and about two miles from, the border of the mountain block known as Dartmoor Forest on Ordnance Survey maps. The City of Exeter lies about 23 miles to the north-east, and to the south-east at a distance of about 6 miles lies the small town of Ashburton.

Whereas the area referred to by the surveyors under the name of Dartmoor Forest is a large expanse of moorland virtually devoid of trees, the part of it to which this history refers is a relatively small area which has been acquired by the Forestry Commissioners. It is not unnatural therefore that when part of the moor was acquired for afforestation it should be given the general name of the area.

The original part of the forest which was acquired in 1931, and a further acquisition in 1932, lie in the triangle formed by the Postbridge-Two Bridges Road, the Two Bridges-Dartmeet Road, and the East Dart River. This part of the forest comprises in all some 1504 acres.

A further acquisition in 1945 which added a further 663 acres, is a compact block lying two miles east of Postbridge with its northern boundary about quarter of a mile south of the Warren House Inn on the Postbridge-Moreton Hampstead road.

A third acquisition in 1946 consisted of 102 acres on the southern slopes of Bear Down about two miles north-east of Princetown; and of 18 acres in two small blocks on Dunnabridge Farm, which lies south of the Two Bridges-Dartmeet road.

#### Area and Utilisation

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

History of Dartmoor Forest

TABLE I

1 Acquired from	2 By	3 Date	4 Plantations Acquired	5 Plantable excl. Col.4.	6 Nurseries	7 Agricul- tural	8 F.W.H.	9 Unplant- able	10 Other Land Perma- ently Transferred.		12 Other Land Temporarily Transfere		14 Total
									Description	Area	Description	Area	
Prince of Wales	Convey- ance	21/4/31	149.016	629.984	-	161.526	27.768	253.589	Forest Houses	3.0	Catchment	8.0	1232.9
Prince of Wales	"	16/5/32	-	235.844	-	-	17.655	17.30					270.8
The King	Lease	11/6/45	-	507.263	-	83.915	-	27.1	Released to Agrlc.	44.6			662.8
The King	Lease	12/2/46	25.8	93.891	-	-	-	-					119.7

2286.2

TABLE II

	<u>Acres</u>
(a) Plantations	
Acquired	174.816
Formed by Commission	1466.982
(b) In hand awaiting planting	
Blanks after felling	-
Burnt Areas	-
Other Land (Catchment)	8.0
(c) Nurseries	
(d) Agriculture, Number of Tenancies (4)	245.441
(e) F.W.H.           Number (4)	45.423
(f) Unplantable land in hand	297.989
(g) Other Land - Forest Houses	3.0
Released to Agriculture	44.6
	<hr/>
<u>Total</u>	2286.251 acres
	<hr/>

Land Utilisation

The main factor which affects the utilisation of the forest land is the attitude of the 'Friends of Dartmoor'. Their aim is to keep the Moor in its present unwooded state because the bare hill slopes look more picturesque than they would if their outlines were blurred by trees. It is for this reason that Compartment 52, immediately below Laughter Tor, has been left unplanted. The ridge also from Bellever Tor towards Postbridge has been left unplanted down to a point about 300 yards above the main road in order that its sharp profile may be seen.

It is partly for amenity purposes also that the grassland immediately on the left of the road leading from Postbridge to Bellever House has been left unplanted, although in these days it is doubtful whether it or the land known as Lakehead Newtake would be allowed to be planted, for both are good grazing land.

Part of the land at Soussons is unplantable because of the old tin mines. These were worked until the end of the 1914-18 war when the low cost of the Malayan tin put them out of business. There is still a good productive seam in Compartment 126. The mine buildings have been demolished during the recent war by soldiers who used the stones for road making.

### Physiography

Dartmoor Forest varies in elevation from 850 ft. to 1425 ft. The lowest point of the forest is in Brimpts Plantation where Compartment 62 comes down to the side of the East Dart River.

Most of the forest, however, is above 1000 ft. and a large part of Bellever, Laughter, and Soussons is above the 1100 ft. mark. The highest point in the main part of the forest is on Bellever Tor, where the tree line goes almost up to 1400 ft., while the highest point in Soussons is slightly in excess of 1300 ft. The highest point of all occurs at the top of Bear Down Plantation which rises to about 1425 ft.

The slopes of the hills on which the forest is situated are generally moderate and can be walked up without difficulty, except where they run down to the River Dart where they occasionally become very steep.

The part of the forest known as 'Bellever' is situated on the north-east slopes of Bellever and Laughter tors, and derives from them a certain shelter from the prevailing south-west wind. The western side of the block is very much more exposed to the wind, as it slopes gently to the west and has no more high ground to protect it for about  $1\frac{1}{2}$  miles. It is quite noticeable that the trees growing on these exposed slopes are very much more slowly grown than those on the slopes away from the prevailing wind.

This is also true of Soussons where the land runs to a point approximately in the middle of the area. On the eastern slopes the growth of the young trees is progressing well, but on the west many of them are in check.

Bear Down plantation which faces south is also very exposed, and the rate of height growth of the young trees which have reached their first thinnings is much reduced due to wind blast.

### Geology and Soils

Dartmoor is formed of granite. The history of this granite is not precisely known, but although the precise sequence of events is obscure, many of its most striking morphological features date from the Tertiary era, when it is thought to have been extruded in the manner of volcanic magma from beneath the existing surface of the land.

The granite of Dartmoor is a coarse grained mixture of quartz, mica and felspar; both black and white micas are found, but most of the felspar is plagioclase, very little pink granite being seen in the neighbourhood of the forest.

The moor is characterised by its grey tors, fantastically shaped piles of granite due to weathering by the splitting action of frost along the natural planes of jointing. The tors are approached by steep though rounded slopes often strewn with boulders - the clitters. Although Dartmoor was beyond the southern limit of the ice sheets, it is probable that the clitters and also the huge boulders which fill the incised gorges of its platform were transported in part by snow slips and in part by solifluction.

The granite is mainly of poor quality being not nearly so durable a building material as is that of north-east Scotland, and it has weathered to a considerable depth. The granite gravel thus formed, where it is well drained, forms a good fertile soil; but Dartmoor as a whole is very poorly drained and the soil which is formed tends to be acid. The poor drainage is in part due to a layer of reddish brown clay which occurs at depths between two and six feet below the surface. This is highly retentive of moisture and lies on a deep stratum of granite gravel. Where this layer is near the surface, as on parts of Laughter Tor, the drainage is greatly impeded and there is a tendency for an iron pan to form. This layer of brown clay is known by the old name of 'Fox Mould' and occurs extensively all over the moor. It is one of the chief barriers to plans for reclaiming the moor by drainage of the hundreds of acres of bog.

#### Soil Pit on Laughter Tor

0 - 2 in.	Plant remains and humus forming layer.
2 - 10 in.	Black fibrous peat, retentive of water. This layer often extends as deep as 16 in.
10 - 14 in.	Semi bleached granite gravel. This is a partly leached layer but is stained by the peat above. Well drained.
14 - 14½ in.	Iron Pan. This commonly occurs between 14 in. and 30 in. It often overlies the reddish clay where this is present.
14½ - 22 in.	Layer of iron and humus deposition, in this case grading into a parent material of granite gravel. On much of this area the parent material is of hard packed semi-decomposed granite which is quite impervious and prevents the drains from being dug as deep as would be wished.



This pit was dug in an area surrounded by Sitka spruce which had checked soon after planting and were still in check. While the pan is in no case a very thick one, it is in places extremely hard, and it does not seem to have been penetrated by roots.

Soil Pit on Bellever Tor

- 0 - 4 in.      Semi-decomposed vegetation
- 4 - 9 in.      Fibrous black peat.      Retentive of water.
- 9 - 18 in.     Brown layer of granite gravel with humus deposition.      Well drained.
- 18 - 23 in.    Slight iron deposits grading into parent material of granite gravel.      Well drained.

All horizons except the peat are well drained.

There is no sign of a pan, and no sign of a red clay layer. The parent solid granite is deep and so has little effect on the drainage. Root penetration reaches the bottom of the iron deposition.

These two are characteristic of most of the forest, and they differ only in the degree of drainage. In the first there was some retardation of drainage which caused slight waterlogging with the result that iron salts were deposited and formed a pan. Once the pan had formed the drainage became more impeded. It is strange that in the second pit there was so little sign of podsolisation. This pit was by far the better drained, and yet the only sign of leaching was the slight iron, humus and peat stain deposition. Presumably the high rainfall on the moor causes the failure of the surface vegetation to decompose when it dies in the winter, and also the temperature is uniformly low during the winter months, so that however good the drainage of the subsoil peat is bound to grow up gradually on the surface.

The third soil type is extensively found at Brimpts and Bear Down, and to an extent in the Runnage bottom at Soussons.

This consists of deep peat resting directly on the parent gravel. It is formed usually in badly drained hollows or on flattish areas where the run-off is less good than on the hill sides. The peat formed is usually 2 ft.- 3 ft. deep and fibrous in nature, but at Bear Down it occasionally reaches depths of 7 ft. Here the lower layers are composed of featureless amorphous rather greasy peat. All these areas are very wet because the peat holds the water so firmly, and therefore drainage is costly and difficult.

## Vegetation

There are two main vegetation types.

The first and most widespread is the Molinia peat moor type, and this occurs at Brimpts, Bear Down, Laughter Tor, and to a lesser extent on Bellever Tor.

The chief species are:-

<i>Molinia caerulea</i>	-	abundant and dominant
<i>Calluna vulgaris</i>	-	frequent
<i>Scirpus caespitosus</i>	-	occasional
<i>Erica tetralix</i>	-	occasional
<i>Potentilla repens</i>	-	rare
Moss species	-	occasional - inconspicuous

This vegetation type is characteristic of the peat moorlands, and in the main is difficult to afforest except where drainage has been very thoroughly done. In the valleys this changes slightly to a type which indicates a better soil condition. This is shown characteristically by the mosses. Polytrichum commune is common, and dry heath species as Hypnum schreberi and Hylocomium splendens can be found occasionally.

On the south and east slopes of Bellever Tor the second vegetation type occurs. This is a better type so far as the soil conditions for tree growth are concerned, for it is approaching a dry heath community.

The chief species are:-

<i>Deschampsia flexuosa</i>	-	abundant and dominant
<i>Calluna vulgaris</i>	-	frequent
<i>Molinia caerulea</i>	-	"
Dwarf and tall gorses	-	"
<i>Galium saxatile</i>	-	"
<i>Potentilla repens</i> mosses	-	occasional
<i>Brachythecium purum</i>	-	frequent
<i>Hylocomium splendens</i>	-	occasional
<i>Hylocomium squarrosum</i>	-	frequent
<i>Polytrichum piliferum</i>	-	"

As will be noted with reference to the soil description, there is really too great a depth of peat to allow a typical dry heath type of vegetation. At Soussons there is found a more typical heath community as signified by the presence of large quantities of Erica cinerea amongst the ling, which is there abundant and dominant. In the damper parts there is also some Erica tetralix.

Although the ground vegetation is indicative of a dry heath condition over much of Soussons, it indicates the soil surface only. Thus, as a result of the high annual rainfall it was decided to plant mainly Sitka spruce. Where pines have been planted they are not doing well.

One of the most interesting features at Soussons is the presence of a patch of Dorset Heath (Erica ciliaris) in the south-west corner of Compartment 125. This is the farthest west point at which this species has been found in Britain, and a square of approximately half an acre has been left unplanted round it.

In order to use the vegetation types as indicators of soil conditions it may be stated as a rough guide that where the Molinia moor type appears there will be impeded drainage and probably a pan. Where the dry heath type appears the drainage conditions will be better and tree growth will probably be quicker, and less money need be spent on preliminary work to ensure a satisfactory rate.

#### Meteorology

The meteorological data which is given below has been obtained from the Meteorological Station at H.M. Prison in Princetown. This is not more than five miles from the main forest block at Bellever and is at a comparable elevation, so the information obtained should be readily applicable to the forest.

#### Rainfall

The following figures are the average of readings taken over a period of 25 years:-

Jan.	7.34 in.	These are the average monthly rainfall figures, and they bring the total for the average year to 90.77 in. This is a very high figure for a point so far south in Britain, and it is probably the limiting factor which allows only a few species to grow on the Moor, even where the soil is well drained. In 1921, which was one of the hottest and driest years of the century, the rainfall was 52.6 in. which is 58% of the normal amount. This is still far above the normal rainfall for the south of England.
Feb.	8.04 in.	
Mar.	7.65 in.	
Apr.	5.38 in.	
May	4.34 in.	
June	4.23 in.	
July	7.68 in.	
Aug.	6.98 in.	
Sept.	4.65 in.	
Oct.	8.17 in.	
Nov.	13.17 in.	
Dec.	<u>13.14 in.</u>	
Total	<u>90.77 in.</u>	

The record amount of rain to fall in any one day at Princetown was 4.4 in. which occurred in 1929, but there are always four or five days in the year when two or more inches fall.

#### Temperature

The following table gives the monthly temperatures at Princetown showing the mean, minimum, and maximum readings taken as an average between the years 1929 and 1934, in all six years:-

	<u>Mean</u>	<u>Min.</u>	<u>Max.</u>
Jan.	36.7	22.8	49.4
Feb.	35.5	22.4	48.6
Mar.	40.3	24.4	56.8
Apr.	41.6	28.2	58.8
May	47.3	34.0	63.7
June	55.2	41.7	72.3
July	56.7	44.7	71.5
Aug.	57.4	46.3	76.2
Sept.	54.6	41.0	65.7
Oct.	47.5	33.4	59.3
Nov.	42.8	31.2	52.3
Dec.	39.4	27.2	51.2

These figures show that it is usual to have frost from November to April. It is also quite likely that there will be May and October frosts, but not as a rule every year. September frosts are rare, but June July and August are the only months during which frost is seldom if ever experienced.

Summer temperatures, especially in August, are often quite high, when the Moor is seen to shimmer under the heat haze. Temperatures in excess of 80° F. are sometimes experienced, while temperatures in the 'seventies' are common on fine summer days.

Damage to young spring shoots due to late frosts in frost hollows occurs in one or two places. The worst of these is in Compartments 40 and 47 beside the East Dart River. The frost lies in the bottom of the valley and much damage was done to Sitka spruce in these compartments. Fortunately there have now been four seasons running without any late frost damage in the forest, and it is hoped that the trees will have profited from this to the extent that most of them may now be above the frost level and the leaders will not be damaged.

### Wind

No data is available on the wind speed and direction at Princetown, but the effects of violent and continuous winds on tree growth are easily seen.

Wind Blast. All the trees on the western and south - western facing slopes have had their growth retarded, and many, especially Norway spruce have had their windward needles yellowed or destroyed by the blast. In addition the violent agitation of the twigs causes them to rub together and the needles are knocked off. This strong south-west wind blows probably two days out of three during the winter months.

The species which stand up best to these winds are Pinus contorta and Sitka spruce though the spruce is often checked and the pine deformed by the continuous pressure. The pine has been tried as a wind shield for the spruce in one area, but it has proved to be a difficult mixture to manage; for the pine has grown so much the faster of the two that it will have to be cut back before its sheltering work is completed.

Strong winds have also from time to time caused some wind break amongst the Sitka spruce. Current year's leaders have occasionally been broken off, often when the tree is young. It is usually the largest trees which suffer, so care has to be taken to remove them in the early thinnings or they may develop into wolves.

Wind Blow. During the winter and at the equinoxes there are often violent gales from the north and north-west. Where the trees are not firmly rooted, as on peat areas, and especially in the case of Douglas fir, there has been a certain amount of wind blow. This has fortunately never been on a large scale.

#### Snow

Snow occasionally falls prolifically on Dartmoor but does not often lie for long. When it does fall, however, it generally drifts, and villages on the Moor are occasionally isolated for a few days at a time. From the forest protection point of view the drifting snow is important as it banks up against the netting wire and allows the rabbits to enter. At the present time when there is young tree growth at Soussons and Bear Down this is a great danger, for a few rabbits in a young plantation when all the ground vegetation is covered by snow will do a tremendous amount of damage. The only way to remove this danger is to go round the wire with a shovel and dig the snow away.

There has been very little snow break at Dartmoor Forest for the main species planted have been Sitka spruce, Norway spruce and some Japanese larch.

#### Risks.

Fire Risk. The two chief dangers are picnickers, and neighbours' swaling. On the whole the risk is not so severe as it used to be, for although picnic parties are now more numerous they were never the chief danger.

Heather burning or swaling is much more dangerous, but this is not done now so much as in past years. Also the neighbouring farmers and shepherds are not so antagonistic to the Forestry Commission as they once were, with the result that they do sometimes warn the Forester before burning is done. There is still too much burning done without warning.

#### Grazing

Sheep. These do not get into the plantations now that the ring fence completely encloses the forest, but previously they used to do a lot of damage. At that time the trees were safe enough when the grass was growing, but in the winter they would get eaten. A large proportion of the plantations are now too tall to be damaged by sheep even when they do get in.

Ponies. These rarely enter the plantations, and they do little damage at any time except when the snow is on the ground, when they have been known to chew the pine trees.

Cattle. These do no damage while there is tender young grass to be eaten. At the moment a grazing experiment is being conducted with the cattle belonging to the Forest Holders. These are kept to certain parts of the forest by means of an electric fence, and within the confines of this fence they may graze where they please. The object is to keep the grass in the rides short and thus decrease the fire hazard, and at the same time provide some valuable grazing which would otherwise not be available.

In the Bellever part of the forest where they are allowed to graze the whole year round the species are mostly Sitka spruce and Pinus contorta, and in the Soussons area, where the first planting was only done in 1947, and they are only allowed to graze during the summer months, the species are:- Sitka spruce, Pinus contorta, Scots pine, Corsican pine. In the Bellever area no damage has been done, but it is only fair to say that since the experiment started there has been no really severe winter weather. The only periods of snow have been short. It is possible that a long spell of hard weather might tempt the cattle to eat the trees.

At Soussons during the summer of 1951 the tenant of Soussons Farm was allowed to graze his seven cattle in the forest. It was thought that they would do no damage to the trees while there was good grass to be eaten, but a close watch was kept on them. It was in fact found that while there was

young grass to be had they did not touch the trees, but at the end of the season when there was no more fresh grass they turned to the pine trees. Little damage was done as they were removed as soon as damage was seen; but it does seem that where young trees are concerned it will not be possible to graze in other than the late spring and early Summer. Probably three months will be the limit of the period. None of the Sitka spruce with which Soussons is chiefly planted, have been touched.

Rabbits. There was considerable rabbit damage when planting was done by the Duchy of Cornwall, as no rabbit fences had been erected. This was especially noticeable in the Sitka spruce at Brimpts. After the Commission had taken over fences were put up and rabbits trapped, and the damage became very slight. Soussons contained a large rabbit population in a warren, but after fencing and thorough warrening there was no more damage.

Black Game. The black game population is small, and therefore the damage which they do is very slight.

Hares. There used to be many of these and they created havoc in the beech planted along the Postbridge - Princetown road, but for some reason the population has so decreased that they are rarely seen now.

Trespassers. Hikers and other walkers in the forest generally keep to the rides and do little damage. Occasionally a few Christmas trees have been taken, and in 1947 quite a number were taken at night from Compartment 81. Apart from this one occasion the loss has not been significant.

Insects. In Compartments 90 and 91 at Dunnabridge during the first planting year there was some Hylobius damage on the young Sitka spruce. This did not continue into the second year.

On the Pinus contorta at Bellever a slight attack of Myelophilus piniperda had been seen, but it has not been widespread or severe.

There have been occasional severe attacks by Neomyzaphis abietina on the Sitka spruce of all ages. These have usually lasted for two or three years, but as a rule the trees have recovered quickly and completely.

Fungi. On the old hardwood site at Brimpts there have been patchy attacks of Honey Fungus on the Sitka spruce. There has also been found to be some Fomes annosus infection in the same area. About 10% of the

thinnings so far taken out have had slight infection. It is not known whether it is increasing or not, but this will show in the thinning due in F.Y. 52. Larch canker has been quite common on the old European larch, most of which has now been felled, at Brimpts. None has been seen on Japanese larch so far.

### Roads

The forest is mainly under twenty years old, the first planting having been done in 1931, except for those plantations taken over from the Duchy of Cornwall. Roads are only now being built to bring out the first thinnings.

When those at present planned have been completed, the roads will comprise:-

(1) The present Laughter Hole road which runs along the boundary of Compartments 40 and 47, through F.W.H.4, and to the forest boundary along the sides of Compartments 55 and 59.

(2) This joins the Laughter road at the boundary of Compartments 41 and 48. It follows this boundary and then the western borders of Compartments 49, 50 and 51, and it is planned to join road (3) at the south point of Compartment 45. This road has been constructed as a feeder and access route, and will remain as such until the first thinnings start to come from Laughter Heath.

(3) This road, which is now almost complete with an all weather surface, runs approximately along the boundary dividing Compartments 42 and 43, 44, 46 and 45. This is just beginning to be the main extraction route for the eastern slope of Bellever Tor. The lower slopes of this Tor were planted in P.31 and P.32, and are gradually yielding their first thinnings.

(4) Road No. (3) is joined at the junction of Compartments 44 and 46 by a feeder road which runs along the boundary between Compartments 46, 80, and 44, and between 79 and 43.

(5) This road will be constructed at Brimpts during the F.Y. 52 to serve almost the whole area. It will run along the ride dividing Compartments 67, 66 and 65, and dividing 60, 62, and 61.

These roads have all been mentioned with a view to their use as



as extraction routes, but work has also recently been done on some of the rides to improve access in case of fire. Mr. Poll, the present forester, has carried out this work during the past two years, mainly among the young plantations in the west and south-west slopes of Bellever Tor. The rides have been drained thoroughly, the soft places have been reinforced with stone, and culverts have been put in where necessary to carry drains across the rides. As a result of this work it is now possible at most times of the year to take a vehicle along these rides for the purpose of fire fighting.

#### Grazing of Rides

An interesting development in the treatment of grass rides came from Mr. Sangar's visit of 17/7/50.

It was suggested that the reserved area of Lakehead was becoming a considerable fire hazard and that it ought to be grazed. This would keep down the Molinia grass and possibly cause a change to better types of heathland grasses. Mr. Sangar extended this idea from the reserved area to all those grass rides on Bellever which would provide good cattle grazing. It was his opinion that no damage would be done to the trees by the cattle, and he suggested that an electric fence might be used to confine the beasts until they had grazed the grass in each area sufficiently short.

This experiment was started at the beginning of 1951, and now that it has been running for a year the general impression is of moderate success. Originally 28 head of cattle were allowed to graze. This number dropped to 17 and then rose to 20 at which total it has remained.

The cattle have tended to frequent the same spots, and the result on rides with the better types of grasses is very satisfactory, but at the expense of the rides carrying rank Molinia which have been neglected after the spring. It will be necessary to concentrate the grazing to a smaller area at a time.

At the recommendation of the Agricultural Executive Committee basic slag is being applied at the rate of  $\frac{1}{2}$  ton per acre to those parts where the better grasses now are. It is hoped that these parts will extend as a result of grazing and slag application.

## Labour

The present labour force is 25 strong. It is necessary to have a stable labour force at a forest such as Dartmoor, for it is impossible to get local labour to make up deficiencies when workers leave or when there is extra work to be done. In the early days there were only six or seven men employed regularly, and when extra men were needed they could just be taken on as required and paid off when the work had been done. This of course was at a time when agriculture in Britain was not at all prosperous. Now, however, the Commission has to induce men to come and work in the forest by offering certain advantages.

It is for this reason that ten houses have recently been completed at Bellever. One of these is occupied by the Forester, and the others by forest workers. Six more workers live in Princetown and are collected each morning by lorry from Two Bridges. There are five holders and their sons, and the remainder of the labour comes from Postbridge.

~~It is certain that~~ as the forest progresses and more and more plantations come into the thinning stage, extra labour will be needed. If more houses are built it will be to the advantage of the men, for the present community is rather small.

These houses are to all intents and purposes tied cottages, though they are let by the year; and three months notice must be given by a tenant before he can leave his house unless a new tenant can be found. If he leaves his forest job he cannot renew his lease.

Dartmoor Forest was more fortunate than many during the labour shortage of the recent war, for few of the plantations were needing more attention than could be given by the four or five men available. There was some planting and the consequent weeding on the west side of Bellever Tor during the early part of the war, but the ~~planting of Sitka spruce~~ <sup>was started</sup> on turves and ~~the weeding was not heavy.~~ <sup>only a little weeding was necessary.</sup>

The Sitka spruce at the south end of Brimpts was under-thinned during the war but subsequent thinnings have prevented damage.

## SILVICULTURE

Preparation of different types of land prior to planting.

### Felled Woodland Sites

These are restricted to odd corners of Brimpts Plantations, for they were not planted in 1921 after the fellings of the first World War. The previous crop had been mixed conifers with oak, ash, and beech, and when these were felled a dense ground vegetation sprang up composed mostly of matted brambles.

This was turf drained and replanted with Sitka spruce in P.33. The brambles were cut and piled in windrows and the trees planted between them.

The triangular point at the south-east corner of Compartment 65 had also been old woodland, but it was impossible to drain it because of old beech roots. It was, however, turfed and planted with beech and sycamore, but neither have done well. They are too exposed to the wind and the beech have become very bushy. Few of the sycamore have survived.

### Heathland

Most of the heathland at Dartmoor is vegetationally not true heath but a type of transition stage towards Molinia moor. Because of this it was decided to drain and turf all the land of Laughter and Bellever before planting. The cause of the bad drainage on Laughter Heath is the proximity of the compacted granite gravel to the surface which limits the depth of the drains. As a result, much of Laughter is still in check. Root penetration is also restricted. Recent clearing of old, and digging of new drains has caused some growth revival, but it is not rapid and much of the hillside is still in check. All the planting on Bellever Tor was done after deep turf draining until 1937 when ploughing began. The species used are - Sitka spruce, Norway spruce and Pinus contorta.

### Marsh or Bog

The first need was to drain the deep bog holes which had formed in the old peat-diggings. The whole area was then drained with deep drains, often as much as six feet deep. These often closed up several times while the peat dried out and they had to be opened out again. Next, turf drains were dug and the plants set on the turfs.

Although most of the drainage was done by the main drains, for the turf drains were never bottomed, this planting has succeeded and the trees

are growing well. Careful maintenance of the main drains is still required because the peat continues to settle.

This method was used in the valley between Bellever and Laughter Tors. Similar land at Bear Down and Soussons which has been tackled more recently has been ploughed.

The species used were:- Sitka spruce, Norway spruce, Pinus contorta and Scots pine. All are satisfactory except the Scots pine which never grows well on Dartmoor.

#### Old Agricultural Land

This is limited to two fields at Bellever (Compartment 43), which were very wet and overgrown with rushes and to some land near Soussons Farm. The first was drained and turf drained and planted with Sitka spruce. This was done in 1950 and so far appears to be growing well.

The second was fairly well drained before acquisition and preparation of ground consisted of deep ploughing with an R.L.R. to about 18 in. This was planted with Sitka spruce and Scots pine in 1947, and to date the Sitka spruce is growing well. The Scots pine was put in as a nurse but the Sitka spruce has grown well without the need for a nurse.

It has been suggested that this ploughing is too deep, that the furrows will never close at all, and that where the plough lines are across the direction of the prevailing wind there is danger of wholesale windblow when the trees reach the pole stage.

#### Planting

Nearly all the planting at Dartmoor has been done at a spacing of 5 ft. x 5 ft. A little was at 5 ft. 6 in. x 5 ft. 6 in. and in Compartment 85 at 3 ft. 6 in. x 3 ft. 6 in. during 1943. The spacing was not varied at all according to species.

To begin with, nearly all the plants came from the Duchy of Cornwall nurseries at Fernworthy, which were acquired by the Commission at the same time as Bellever. Later, although these home nurseries supplied many of the plants required, most of them were obtained from other sources; the New Forest Conservancy being one of the chief suppliers.

For all species, where turf planting was not being done, mattock planting was the method used. The ground was first screefed with the mattock, and the plant was inserted into a mattock notch. The beat-up

figures indicate that this method was reasonably successful.

There is one exception to this. Schlich spade planting was done at Dunnabridge. The growth of the Sitka spruce in these two small compartments shows that this method was a success. Beating up, however, was done on turfs.

There was some manuring done in planting. This was basic slag and was applied at the rate of one handful of slag round the roots of each tree applied after planting. This application was made in Compartments 50, 51, 53 and 54 during F.Y. 34. Although actual measurements have not been taken there is no noticeable difference between slagged and non-slagged trees.

All plantations have managed to establish themselves reasonably well with the exception of those on Laughter Heath. It seems that turf planting here is not the answer, for there is an impermeable pan over much of the area lying between 1 ft. and 3 ft. deep. This pan could have been broken up by deep ploughing with an R.L.R., and this would probably have made all the difference. As it is, most of the trees have checked at less than 6 ft. and even re-draining has not encouraged them much.

#### Ploughing

The first ploughing was done in 1937 when both Oliver and Ransome double furrow ploughs were used. The soil was fairly easy to work and in places the furrows were up to 15 in. deep. The furrow spacing was 5 ft. These tools were used until 1941, that is until the planting of Bellever was complete.

When in 1946 work began at Soussons an R.L.R. plough was used which penetrated to anything between 15 in. & 18 in. except on some rocky areas where 7 in. to 8 in. was as deep as it could go. This area was completed in 1949, and in 1949 and 1950 the plough was used in the deep peat at Bear Down.

Drainage only was required before ploughing. Of course the drains were mostly ruined when the ploughing was done, but without them it would have been too soft for the tractor. Yet it was considered to be a better proposition than turf draining. In fact some places were not drained enough and the tractor was bogged, but on the whole it was successful.

The types of land tackled were two:-

(1) Molinia moor, wet heath, and deep peat. These are all classed together for they were all ploughed for the same reason, to drain off excess water. This object has been successfully achieved.

(2) Dry heath with iron pan. This is found on Soussons, and again ploughing was successful.

All ploughing was done as deep as possible at a spacing of 5 ft. and it was either done directly up and down the hill or diagonally down it. Contour ploughing has not been found necessary for the mineral soil is extremely porous. This prevents either excessive run off down the furrows or danger of the plants being starved of moisture, for the rainfall is high and evenly spread over the year.

The method of planting used on the ploughed land has been L notching. Planting was done on top of the ridges until 1950. At Bear Down in that year planting on the side of the furrows was started. As mentioned in the sub-section on preparation of ground, there is thought to be danger of wind blow at Soussons where trees were planted on the ridges.

Trees used for planting on ploughing were of all ages, but the commonest used were:- Sitka spruce 1+1, 2+1, and 2+2; pine 1+0 and 1+1, occasionally 2+1; Norway spruce 2+2 and 2+3. There has been no great variation by species or age on the ploughing, for even seedling Scots pine have been saved from weed competition for the first two years and have come away satisfactorily. It is true to say, however, that planting on ploughing has been much more successful than planting on unploughed land. The trees have grown quickly from the start, and there has been little weeding.

#### Beating Up

Until 1950 beating up was done without any extra maintenance works being done. In 1950, however, at Soussons (Compartments 108 and 123), it was found that insufficient drainage had been done before planting, so it was decided to turf drain the bad areas and plant on the turfs. This was therefore more of a replant than a beat-up, but it has been effective and the plants are growing well.

It is reported that in the original Duchy plantations at Brimpts there had been many losses due to rabbits. The remaining trees were quite tall, and so the beat-ups, to be successful, had to be large plants which would yet suffer no check from transplanting. The method used was to turn up

individual turfs, and on them to plant extra tall transplants which had been moved complete with their roots still contained in a ball of the earth in which they had been growing. This was a costly operation, but it has been to some extent successful. Many of these trees never reached the canopy level; but others in the larger spaces were able to complete the canopy of the plantations, though they still look open and patchy in places and there is a shortage of trees to take out in the early thinnings.

There were certain changes of species used for beating up.

Tsuga was used to beat up Sitka spruce in Brimpts, and some trees are growing well, but no better than the surrounding Sitka spruce, while many have been swamped.

Thuja used in Japanese larch at Brimpts has survived, but it started under the Japanese larch and is still there. No doubt it will come through if the Japanese larch is thinned heavily towards the end of its period of optimum height growth.

In Compartment 42 at Bellever, Abies grandis has been used to beat up Norway spruce. It has grown slightly better than the Norway spruce.

The most successful changes were made on Laughter Heath, Compartments 40, 41 and 48, and on Bellever, Compartments 81 and 82. Here Pinus contorta has been used to beat up spruce, mainly Sitka spruce. The pine is growing quite well, and it is hoped that it may develop a nursing effect, but so far it is not tall enough to give any result. In both areas the Pinus contorta was put in six years after the original planting.

In Compartments 40 and 47, in the river valley, the Sitka spruce was badly frosted and was replaced by Norway spruce and Scots pine. These have not suffered from frost, but their growth has been only moderate. Also in Compartment 47, Corsican pine was used to beat up Sitka spruce which was suffering from heather check. The Corsican pine has largely failed for the rainfall is too high for this species.

A study of the beat-up figures on the forms R.1. gives the impression that more beating up was done than was strictly necessary. It may be that there were many localised failures, but often a few hundred plants are noted as having been used in a compartment, and one might suppose that this was often a waste of time.

### Weeding

The weed growth on the new forest land was generally not heavy, and weeding was not done every year; nor was it over-all weeding, but only the patches which needed it received attention. The worst Molinia patches were weeded for about three years after planting, and in clumps of gorse spot weeding was done round each tree until it had got its head free. Rushes also gave some trouble in Runnage Bottom at Soussons, Compartments 108 and 123.

Very little damage was done by weeds, but it is likely that if weeding had been neglected the trees would have been smothered by Molinia and rushes, and in windy weather rubbed by gorse.

### Mixture of Species

No nurse species have been used at all at Dartmoor, in that none have been planted specifically as such before the main crop species. On the other hand the beating up of Sitka spruce and Norway spruce with Pinus contorta as previously mentioned, was done primarily with the idea that the Pinus contorta would grow up through the others and help them to come out of check. Also, in Compartment 79, Pinus contorta was planted with Sitka spruce at the rate of 2 rows of Pinus contorta to 3 rows of Sitka spruce to afford the Sitka spruce shelter from the wind and to kill off the ground vegetation. The Pinus contorta has now reached a stage when there is danger of it suppressing the Sitka spruce and this was noticed by Lord Robinson during his tour at Easter 1951. He advised that while there was no immediate danger of the Sitka spruce being swamped, it would be a good idea to ring the Pinus contorta at shoulder height where it can be seen to be damaging the Sitka spruce. Thus the pine can still be retained for its job of vegetation suppression without letting it compete with the spruce.

Mr. Sangar noted that it would have to be carefully done, for it would be easy to spend more money per Sitka spruce saved than the value of that tree as a member of the final crop, or indeed as a member of the crop at any stage.



## Treatment of Established Plantations

### Brashing

This is a young forest and so not much brashing has so far had to be done other than in the plantations acquired from the Duchy of Cornwall. All brashing has been done 100%, one or two years before first thinning.

No pruning has yet been done.

### Thinning

Only a very small proportion of the forest has been thinned. The plantations at the south end of Brimpts came into the thinning stage during the recent war, but due to the shortage of labour the thinning had to be delayed. After the war a light thinning, which hardly removed more than dead, dying and diseased trees, was done; but it was not until July 1950, when the trees were 28 years old, that they were first properly thinned. Even then the thinning had to be light for fear of windblow, but the 100 trees per acre taken out yielded 920 cu.ft.

It must be remembered that these plantations suffered severe rabbit damage early in life, and so the delay in thinning was not so harmful as it would have been in a fully stocked wood. All the older plantations at Brimpts will be thinned during F.Ys 52 and 53 which will bring them silviculturally up to date.

Of the Commission plantations, the only thinning done so far has been in Compartments 42 and 43 where the species are Douglas fir and Sitka spruce. The first yielded 387 cu.ft. per acre, but Compartment 43 was very variable, yielding 260 cu.ft. per acre at the bottom of the slope but only about 50 cu.ft. per acre in the patchy crop at the top.

The programme will be increasing steadily year by year as more plantations become ready to be thinned. For F.Y. 52 the programme is 44 acres of first, and 58 acres of subsequent thinnings.

This programme excludes work which is now going on in Compartment 64, where in 1950 a heavy beech mast from the acquired standing timber gave good regeneration in 1951.

It was decided to try to take advantage of this, so a post-regeneration felling was marked. Rabbit fencing was erected before the winter set in, and felling commenced shortly before Christmas 1951. The main species felled are beech, Norway spruce, and Silver fir. There is also some oak,

ash, sycamore, Scots pine and European larch. Total volumes of timber felled are expected to be 3500 cu.ft. of hardwoods of which 2000 cu.ft. will be beech and 2700 cu.ft. of mixed conifers of which the majority are Norway spruce and Silver fir.

Normally produce from the forest is pitwood. The smaller sizes are sent from Princetown station to the Somerset and South Wales coal fields, and the larger timber is taken by lorry to the clay mines near Newton Abbot. There has also been some production of peeled conifer stakes which are pressure-creosoted in Plymouth. These are used internally by the Commission and the surplus sold.

## RESEARCH

### Nutrition Committee Experiments at Dartmoor Forest

The experiments were planted in 1947 and 1948 as part of the investigations carried out on behalf of the Sub-Committee on Nutrition Problems in Forest Nurseries by the Chemistry Department of Rothamsted Experimental Station and the Research Branch. The nursery experiments were concerned mainly with the use of composts, fertilizers, "partial sterilization" and other soil treatments on the growth of seedlings and transplants of Sitka spruce and Scots pine in heathland and old-established nurseries. The forest experiments were mainly extension trials, testing each year in two or more forests the behaviour of seedlings and transplants raised with contrasted nursery treatments. There were, in addition, a number of experiments on the effects of fertilizers applied in the forest either immediately before or soon after planting. Most of the experiments were of complex factorial design.

The Dartmoor experiments, planted early in 1947 and 1948, were on a grassy site near farm buildings in the corner of a large planting most of which was on Calluna on peaty moorland over granite. After fencing and ploughing late in 1946 grasses grew rapidly and interfered badly with the establishment of the 1948 plantings on stale furrows. The plantings were made with alternating pairs of Sitka spruce and Scots pine, those in each plot being derived from a single nursery plot, split for the two species.

The 1947 plantings were parallel with others at Broxa and Decoy Heath, Wareham; the 1948 plantings with others at Broxa, Gwynno (Sitka spruce), King's Forest (Scots pine).

### 1947 Plantings

Four years after planting the mean heights in inches were:

	<u>Sitka spruce</u>	<u>Scots pine</u>
1+1 transplants	45	46
1+0 seedlings	34	36

Plants raised with compost or fertilizers in the nurseries gave closely similar performances in the forest. Some of the benefit from additional nitrogen fertilizer in the nursery still showed in the forest after four years.

Fertilizers applied shortly before planting markedly increased the heights of Sitka spruce but not of Scots pine transplants four years later.

	<u>Mean height in inches, 1950.</u>	
	<u>Sitka spruce</u>	<u>Scots pine</u>
no fertilizer	38	44
phosphate alone	46	44
nitrogen + phosphate	50	44

### 1948 Plantings

These included many lots of small first-year seedlings raised in the drought of 1947. Some of the experiments were preliminary tests on unusual nursery treatments. The seedlings survived poorly in the overgrown grassy site on stale furrows.

One of the experiments tested separate batches of first-year seedlings and 1+1 transplants from Sugar Hill Nursery, Wareham. These had been raised with compost on repeatedly composted ground in the older part of the nursery and with fertilizers alone on a new part which was carrying its first crop after clearing from heathland. All four lots were tested with and without fertilizer at planting time. There were only small differences due to the extreme contrast in nursery manuring. In the forest fertilizers greatly increased growth of Sitka spruce but had only small effects on Scots pine. Without fertilizers the Scots pine was taller than the Sitka spruce, but with fertilizers the Sitka spruce was the taller.

Mean height in inches

	At planting early 1948	After four years in forest late 1951	
		<u>Planted without fertilizer</u>	<u>Planted with fertilizer</u>
<u>Sitka spruce</u>			
1 + 1 transplants, with compost	6.3	20	32
1 + 1 transplants, with fertilizer	6.0	18	33
1 + 0 seedlings, with compost	1.9	13	22
1 + 0 seedlings, with fertilizer	1.4	16	28
<u>Scots pine</u>			
1 + 1 transplants, with compost	1.8	28	28
1 + 1 transplants, with fertilizer	2.7	27	30
1 + 0 seedlings, with compost	1.6	19	21
1 + 0 seedlings, with fertilizer	2.7	21	24

In other experiments superphosphate markedly increased the growth of Sitka spruce after four years in the forest - by 46% for 1 + 0 seedlings and by 17% for 1 + 1 transplants. Superphosphate also increased height growth of 1 + 0 Scots pine seedlings (by 27%) but had no effect on 1 + 1 Scots pine transplants. Nitrogen fertilizers applied in the year of planting appreciably reduced the growth of Scots pine seedlings and transplants but had no effect on the Sitka spruce. Potassium fertilizers had no effect.

Summary

1. Plants raised with compost or fertilizer in the nursery gave closely similar performances in the forest.
2. Phosphate greatly increased the height of Sitka spruce seedlings and transplants and of Scots pine seedlings but not of Scots pine transplants.

Conclusions

There are three main conclusions to be drawn so far from experience in Dartmoor Forest.

(1) The high annual rainfall and the fact that it is spaced evenly throughout the months of the year makes it essential that the drainage is thorough at the beginning and conscientiously maintained thereafter. The drainage below the peat is often quite free through the granite gravel, but much of Dartmoor has an impermeable layer of reddish clay overlying the granite which causes impeded drainage. It also helps the build up of an impermeable iron pan. Where these conditions exist near the surface the only answer is to break through with a deep plough.

(2) The only pine which has grown with any vigour in the humid conditions is Pinus contorta species as Scots pine and Corsican pine which thrive in the drier climate of the east coast do not do at all well here. Sitka spruce is undoubtedly the most promising species used so far, but care must be taken to keep it out of the frost hollows. A species of which little has been planted, but which seems from its limited use to suit the conditions, is Tsuga. More of this might profitably be planted in the more sheltered parts of any new acquisitions.

(3) There can be no such thing as a true 'fair weather' road on Dartmoor because there are so few periods during the average year when the roads have time to dry out. For extraction therefore it will always be necessary to think in terms of properly drained and constructed roads. Because of the cost of maintaining such roads it will be necessary to plan the thinnings in such a way that no road will be used for heavy traffic more than one winter in every three. Care must also be taken to see that no road is used to extract small parcels of timber when reorganisation would make it possible for larger quantities to be extracted over the road at a time. In this way maintenance costs will be reduced.

## History of Dartmoor Forest

### APPENDIX I

#### Notes from Inspection Reports

##### Chairman's Visit, 15/4/35. (Sir Roy L. Robinson)

The Chairman suggested that a belt of beech be planted along the Postbridge - Two Bridges road, and that a ploughed fire line be constructed inside it, to reduce the danger of fire spreading from this road, much used by holiday makers. This was done.

##### Chairman's Visit, 25/8/36.

Brimpts, Compartment 67. The Chairman noticed that scattered beech seedlings were appearing now that the rabbits had been cleared out, and he suggested that many more would come. Experience in Compartment 64 in F.Y.51 previously mentioned, has shown that beech regeneration on a reasonable scale can be attempted on Dartmoor when there is a good mast year.

Compartment 66. The Chairman instructed that a group of Tsuga be planted in a gap in the P.33 Sitka spruce. This was done in P.37 and has grown well. It evidently came away well at the start, for it is reported as good in 1943.

##### Chairman's Visit, 31/8/37.

The Chairman inspected the contemplated acquisition on Bear Down. He noted that failure was primarily due to impeded drainage. Where drainage conditions were better the growth had been satisfactory, so that when the fence was broken down and cattle got in those trees were undamaged. Many of the trees in check on poorly drained land were browsed and killed.

Compartment 66. There had been an increase of beech regeneration in the shelter belt along the west side. Ultimately there would be almost a full underwood to form an effective wind belt, and the Chairman suggested that this should be treated under a selection system when it attained maturity.

##### Visit by Sir Roy L. Robinson and Mr. W.L. Taylor, 6/4/43.

Brimpts. Compartment 67. As an addition to the previous notes on thinning it is noted that the eastern part of this compartment which was

far in advance of the other plantations in southern Brimpts, was thinned in 1943 with satisfactory results. The remainder of Compartment 67 needed to be thinned soon, and the Chairman instructed that it be done. The whole compartment was marked for thinning in 1945 and was subsequently thinned and extracted by the Timber Production Department.

Visit by Mr. A.P. Long, 11/7/45.

Mr. Long commented on the Brimpts plantations as follows:-

"As regards thinnings: in the past we have tended to thin somewhat lightly. As there were few plantations in the thinning stage it did not matter greatly because we could return in a year or two and keep control. Now each year more and more plantations come into thinning and soon there will be a large area needing treatment, and the experience is that under these conditions one generally tends to fall into arrears with the thinning programme. Thus, if the plan is followed properly, there will be no opportunity for catching up arrears, and it follows that when we thin we must thin heavily enough to avoid the need to return before the plan date. This degree of thinning will certainly be heavier than in the past, and especially so in the case of Sitka. I need only mention the plot in the New Forest where it required a thinning each successive year for seven years before the proper density was reached. In other words Sitka demands much heavier thinnings than is generally realised, and will respond."

Many other notes from inspection reports are embodied in the main part of this history.

History of Dartmoor Forest

APPENDIX II

Record of Supervisory Staff

Date	Div. Officer	Dist. Officer	Forester	Remarks
1930	Mr. C.O. Hanson	Mr. Russell		Mr. Hanson retd. 31.3.31.
Acquired 1931	Mr. F. Scott	Mr. Russell	Mr. W.J. Hale	
1934	" " "	Mr. R.G. Broadwood from 8.10.34.	Mr. H.J. Wallington	
1938	Mr. R.G. Broadwood	" " "	" " "	Mr. Scott trans. 1.4.38.
1939	" " "	" " "		
1940	" " "	" " "		
1941	" " "	" " "	Mr. J. Williams	
1942	" " "	" " "	" " "	
1943	Mr. J.E. James	" " "	" " "	
1944	" " "		" " "	
1945	" " "		" " "	
Conser- vancy 1946	Mr. A.H. Popert from 1.3.46.		Mr. J. Williams	
1947	" " "	Mr. D.N. Williams	" " "	
1950	" " "	" " "	Mr. E.A. Poll	
1951		Mr. J.P. Newton	" " "	
to date				



History of Dartmoor Forest

APPENDIX III

Schedule of Rates of Growth

Compt.	Species	P. Yr.	Age	Geology and Soil	Altitude Aspect Slope Exposure	Mean Ht. of Dominants	M. A. I.	C. A. I.
40	S. S. N. S.	31 31	21 21	Granite Gravel <u>Molinia</u> Peat Retarded Drainage	1025 ft. E. Moderate Sheltered	22' 18'	12" 10½"	27" 20"
41	SS & PC	31	21	" "	1030 ft. N. E. Moderate Slightly expd.	20'	12"	24"
42	N. S.	32	20	Granite Gravel <u>Molinia</u> Peat Podsol Free Drainage	1100 ft. N. W. Mod. steep Rather expd.	22'	13"	15"
42	D. F.	31	21	Deep Peat of <u>Juncus-Molinia</u> on Granite Impeded Drainage	1050 ft. Level Level Sheltered	36'	20"	27"
43	S. S.	31	21	Wet Heath Podsol on Granite Gravel. Free Drainage	1100 ft. E. Steep Fairly sheltered	31'	17"	22"
44	N. S.	32	20	" "	1200-1300 ft. E. Steep Fairly sheltered	20'	12"	15"
45	S. S.	32	20	Peaty Podsol on Granite Gravel Retarded Drainage	1200 ft. E. S. E. Moderate sheltered	26'	15"	16"
46	S. S.	32	20	Peaty Podsol on Granite Gravel Retarded Drainage	1300 ft. E. Mod-Steep Fairly exposed	25'	15"	20"
47	S. S. P. C.	33 39	19 13	<u>Molinia</u> Peat on Soft Pan Impeded Drains	1025 ft. E. Steep Sheltered	8' 8'	5" 7"	7" 16"
48	S. S. L. C. Ride Ts. "	33 33 33	19 19 19	" "	1100 ft. E Moderate Fairly exposed.	8' 10' 18'	5" 6" 11"	6"
49	S. S.	33	19	" "	1125 ft. N. E. Moderate Fairly exposed	10'	6"	9"
50	)S. S. )P. C. )S. S. )P. C.	33	19	<u>Molinia</u> Peat Podsol on Soft Pan Impeded Drainage	1100-1250 ft.	6'	4"	7"
51		39	12		N. N. E.	6'	6"	10"
53		34	18		Moderate	4'6"	3"	4"
54		39	12		Exposed	6'	6"	10"
72	N. S. S. S.	36	16	<u>Molinia</u> Peaty Podsol on Granite Gravel Drainage Free	1150 ft. N. E. Gentle Fairly exposed	15' 8'	11" 6"	14" 9"
73	S. S.	36	16	" "	1175 ft. N. N. W. Moderate Exposed	17'	13"	19"

Compt.	Species	P.Yr.	Age	Geology and Soil	Altitude Aspect Slope Exposure	Mean Ht. of Dominants	M. A. I.	C. A. I.
74	N. S. S. S.	36 36	16 16	<u>Molinia</u> Peaty Podsol on Granite Gravel. Drainage Free	1200 ft. N. E. Moderate Fairly exposed	14' 14'	11" 11"	15" 12"
75	S. S.	36	16	" "	1200 ft. N. Gentle Exposed	13'	10"	10"
76	S. S.	37	15	" "	1300 ft. N. Gentle Exposed	14'	11"	11"
77	S. S.	37	15	" "	1250-1300 ft. E. Mod-Steep Fairly sheltered	10'	8"	12"
79	S. S. P. C.	38	14	" "	1250-1350 ft. N. E. Level to Steep Mod. sheltered	12' 16'	10" 14"	18" 15"
81	S. S. P. C.	39 43	13 9	<u>Molinia</u> Peat on Granite Gravel Retarded Drains	1225 ft. N. W. Mod. exposed	8' 7'	7" 9"	12" 16"
82	S. S.	39	13	" "	1225 ft. W. Mod. exposed	7'	7"	10"
84	S. S.	41	11	" "	1300 ft. N. W. Gentle Exposed	5'6"	6"	9"
60	N. S. S. S.	35 23	17 29	Peaty Podsol on Granite Gravel Free Drainage	1000 ft. N. E. Steep Sheltered	26' 47'	18" 19"	24" 26"
61	S. S.	23	29	Medium to Deep peat. Drainage Retarded	1100 ft. N. Mod. Steep Fairly sheltered	46'	19"	33"
62	J. L.	26	26	Peat Podsol on Granite Gravel Drainage Free	1000 ft. N. Steep Sheltered	48'	22"	30"
65	S. S.	22	30	Medium Peat Drainage Retarded	1050 ft. E. N. E. Gentle Sheltered	65'	26"	30"
66	S. S.	22	30	Medium Peat Drainage Impeded	1100 ft. S. Level to gentle Exposed	50'	19"	20"

History of Dartmoor Forest

APPENDIX IV

Details of species planted

1931. First planting at Bellever. This year 45 acres were planted in Compartments 40, 41, 42 and 43. The species were, Norway spruce, Sitka spruce and some Douglas fir in Compartment 42. Unfortunately the records of this, the first planting year, have been lost.

1932. Planting done in Compartments 42, 44, 45 and 46. Area 83 acres.

<u>Species</u>	<u>Ident.No.</u>	<u>Age</u>	<u>Source</u>	<u>Compartments</u>
Douglas fir	-	2-3	Fernworthy	42
Norway spruce	-	2-0	"	42
Norway spruce	-	2-1-1	"	42, 44
Norway spruce	-	2-3	"	44, 45
Sitka spruce	29/55	2-0	Eggesford	44, 45
Sitka spruce	28/43	2-1	Fernworthy	45
Sitka spruce	27/8	2-2	Exmoor	44, 45, 46

1933. Planting done in Compartments 47, 48, 49, 50, 51 and 57, at Bellever. = 97 acres, and in 64, 65 and 66 at Brimpts = 17.4 acres.  
Total - 114.4 acres.

Japanese larch	31/87	1-1	Fernworthy	64, Rabbit damage.
Norway spruce	-	2-2, 2-3	"	47, 50
Sitka spruce	29/55	3-0, 2-1	"	47, 48, 55
Sitka spruce	30/29	2-1	Ringwood	45, 47, 49, 50, 51. 65, 66.
Sitka spruce	30/29	2-1	Whitelimes	57, 66.
Sitka spruce	28/43	2-1-1	Fernworthy	48
Tsuga	-	2-1	Breckfa	47, 48, Ride Rows
Lawson Cypress	29/-	2-1	Fernworthy	47, 48. " "
Beech	-	2-2	-	65, 66.
Hornbeam	-	1-2	Tintern	64

1934. Planting done in Compartments 52, 53, 54, 55, 58 and 59, at Bellever. 61 and 62 at Brimpts. Total 100 acs.

Norway spruce	31/12	3-0	Fernworthy	58, 59.
Sitka spruce	30/29	3-0	Cannock Chase	58.
Sitka spruce	"	"	Fernworthy	53, 54
Sitka spruce	"	2-1	Fernworthy	53, 55, 58.
Sitka spruce	"	3-1	Fernworthy	55.
Sitka spruce	29/55	"	Ringwood	52, 55.
Sitka spruce	29/55	2-1-1	Fernworthy	61-62

1935. Planting in Compartments 45, 56, 57, 60, 61, 62, 63, 68. }  
Total 98.7 acs. }

Norway spruce	30/12	2-2	Division 4	68.
Norway spruce	30/16	3-2	Fair Oak	56, 60, 68.
Sitka spruce	33/13	2-0	Fernworthy	56.
Sitka spruce	32/6	2-1	Ringwood	57, 60, 63.
Sitka spruce	32/6	2-1	Bramshill	68.
Sitka spruce	30/49	2-1	New Forest	56, 63.
Sitka spruce	30/29	2-1-1-1	Div. 4.	68.
Sitka spruce	30/29	2-2	Div. 4.	68
Sitka spruce	30/29	2-2-1	Div. 4.	68
Sitka spruce	29/55	3-2	Haldon	68
Beech	32/77	1-2	Halwill	65
Sycamore	32/86	1-1-1	Haldon	65

1936. Planting in Compartments 68, 72, 73, 74, 75. At Bellever, 103.9 acs.

<u>Species</u>	<u>Ident No.</u>	<u>Age</u>	<u>Source</u>	<u>Compartments</u>
Norway spruce	30/12	3-2	Fernworthy	74
Norway spruce	"	"	Ringwood	72, 73, 74, 75
Norway spruce	30/16	3-1-2	Fernworthy	74
Sitka spruce	32/6	2-1-1	"	74
Sitka spruce	30/29	2-1-2	"	72, 74
Sitka spruce	32/6	2-2	"	72, 73
Sitka spruce	29/55	3-1-1-1	"	74
Thuya	31/31	2-1-2	"	72, 74
Beech	32/17	1-1-1-1	Haldon	73
"	32/17	1-3	Fernworthy	72, 73, 74
Sycamore	32/87	1-2-1	"	73, 74

1937. Planting at Bellever in Compartments 76, 77 and 78. 84.2 acres

Sitka spruce	32/6	2-1-2	Fernworthy	77, 78
Sitka spruce	33/13	2-2	"	76, 78
Sitka spruce	32/6	2-2-1	Ringwood	76, 77, 78
Sitka spruce	31/13	3-2-1	Div. 7	77, 78
Sitka spruce	29/55	3-1-1-2	Fernworthy	77, 78
Pinus contorta	35/17	1-1	Laughton	77, 78
"	"	2-1	Eggesford	76, 77, 78. ) Mixed with Sitka spruce
Lawson cypress	Brendon	2-0	Brendon	78. Coronation G.R.

1938. Planting at Bellever in Compartments 44, 79 and 80. 55.8 acres.

Norway spruce	30/12	3-2-2	Fernworthy	44
Sitka spruce	35/14	2-1	"	79, 80
Sitka spruce	35/39	2-1	Altonside	79, 80
Sitka spruce	33/13, 34/41	1-2-1	Haldon	79
Sitka spruce	33/13, 34/41	2-2	Fernworthy	79
Sitka spruce	32/6	2-2-1-1	Fernworthy	79
Lawson cypress	Brendon	2-1	Fernworthy	79
Pinus contorta	34/40	2-1	Eggesford	79, mixed with S.S.
Beech	35/77	1-2	Haldon	44, 80.

1939. Planting at Bellever. Compartments 81 and 82. 51.1 acres

Sitka spruce	36/23	2-0	Halwill	82
Sitka spruce	36/23	3-0	New Forest	81
Sitka spruce	"	2-1	Fernworthy	81, 82
Sitka spruce	35/39	2-1-1	Fernworthy	81, 82
Sitka spruce	35/14	2-1-1	Fernworthy	81, 82
Sitka spruce	33/13	2-1-2	Fernworthy	81, 82
Sitka spruce	34/41	2-1-2	Fernworthy	81, 82
Sitka spruce	34/38	2-1-2	Fernworthy	81, 82
Sitka spruce	34/41	2-2-1	Fernworthy	81, 82
Sitka spruce	34/38	2-2-1	Fernworthy	81, 82
Sitka spruce	33/13	2-2-1	Fernworthy	81, 82
Abies grandis	36/35	2-1	Brendon	82.

1940. Planting at Bellever. Compartments 81, 82, 83, 84. 88.3 acres

Norway spruce	34/42	2-1-1-2	Fernworthy	82
Sitka spruce	36/23	2-1	Halwill	81, 82, 83, 84
Sitka spruce	36/23	2-2	Brendon	81, 83
Sitka spruce	35/14	1-1-1-2	Fernworthy	81, 82

1941. Planting at Bellever. Compartments 85, 86. 106.8 acres

Sitka spruce	36/23	2-2, 2-3	Fernworthy	85, 86
Sitka spruce	33/13, 34/38			
	34/41	2-1-2-2	"	85, 86
Pinus contorta	38/26	2-1	Haldon	86
Beech	E. F. A.	1-1-3	Lydford	85, 86.

<u>Species</u>	<u>Ident. No.</u>	<u>Age</u>	<u>Source</u>	<u>Compartments</u>
<u>1942.</u>	Burned Area Replanted.		Compartments 56, 58, 59.	23.3 acres.
Sitka spruce	36/23	3-2, 2-2-2	Fernworthy	56, 58, 59.
<u>1943.</u>	Planting at Bellever.		Compartment 85.	17.3 acres
Sitka spruce	38/31	2-2	Fernworthy	85
<u>1944 and 1945.</u>	No Planting.			
<u>1946.</u>	Planting at Dunnabridge,		Compartments 90, 91.	17.7 acres
Sitka spruce	39/27	2-3	Fernworthy	90, 91
<u>1947.</u>	Planting at Soussons.		Compartments 101 to 105.	72.5 acres
Scots pine	43/11B	1-0, 1-1	Wareham	Experiment.
Sitka spruce	44/1	1-1	"	"
Sitka spruce	"	"	"	101 - 105
Sitka spruce	40/5	3-3	Savernake	" "
Sitka spruce	40/5	3-3	Brendon	" "
<u>1948.</u>	Planting at Soussons.		Compartments 98, 99, 101, 102, 106, 107, ) 109, 110, 111, 112 - 117, 119 - 122, 124 - 126. ) 308 acres. )	
Sitka spruce	44/10	2-1	Mendip	99
Sitka spruce	44/8	2-1	Widehaugh	101, 111 - 126
Sitka spruce	44/1	2-2	Haldon	99
Sitka spruce	43/2	2-2	Eggesford	98
Sitka spruce	43/2	2-2	New Forest	106 - 110
<u>1949.</u>	Planting at Bear Down and Soussons.		Compartments 97, 107, 108, ) 117, 118, 123, 126, 127, 128. ) 150.5 acres. Soussons ) 15 acres Bear Down )	
Scots pine	45/11A	2-1	Brendon	107, 108, 123.
Scots pine	45/11A	2-1	Ringwood	126, 127.
Scots pine	45/11B	1-2	Fernworthy	117, 118, 123.
Corsican pine	46/12K	2-1	Haldon	127.
Norway spruce	43/16F	4-2	Haldon	107, 123.
Norway spruce	43/16B	3-2	Haldon	123.
Norway spruce	43/16M	2-2	Haldon	108, 123.
Sitka spruce	44/10	2-2	Fernworthy	97, 100, 117, 118.
Sitka spruce	44/8	2-1-1, 2-1	Culmhead	126, 128.
Pinus contorta	44/5	2-1-1	Brendon	97, 107, 126, 127, 128.
Picea omorika	43/24	2-1-2	Brendon	101, 117.

Dartmoor

