FORESTRY COMMISSION

HISTORY

OF

QUANTOCK

FOREST

SW(E) CONSERVANCY

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of

QUANTOCK FOREST

1922 - 1951

SOUTH WEST (ENGLAND) CONSERVANCY

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HISTORY OF QUANTOCK FOREST

CHAIRMAN'S COMMENTS

My first visit to the forest was before the 1914/18 war when I spent a night with the Agent, Mr. Coppleston (The Copplestons were a local family, remarkable at least for the fact that it could field a cricket team!). My only recollection of the woods during a hurried visit is the predominance of oak coppice.

Deer. I don't think the woods were ever a deer forest but rather a more or less natural harbourage for Quantocks deer which were tolerated by the then owner.

Following an inspection of 1/9/32 I took up the question of deer damage in our new plantations. It appeared that locally our management had been lax in dealing with deer on the assumption that it was the Commission's policy. It was even argued both by the Hunt and by our own people that the deer were doing little damage. It was as a demonstration on that point that a number of small enclosures were made. I was concerned not only with comparatively sporadic damage to conifers but also with the fact that it was practically impossible in the face of the then deer population to raise any hardwoods. The heat was accordingly turned on the Hunt with the ultimate threat that we would if necessary put on our own man to kill deer. The Hunt for its part played up well and I gather that the head of deer has since been kept down to reasonable figures.

A similarly firm line was taken with regard to ponies and sheep.

The moral is that if we are firm and vigilant at all times we need not suffer great damage from grazing animals.

Silviculture

No doubt planting proceeded too quickly at first. There was something to be said for that course because heavy growth of coppice was to be anticipated. On the other hand in the choice of species we had to work from the small amount of evidence on the ground and on general knowledge gathered elsewhere. The problem was to stick as far as possible to "safe" species. Rectification of errors when perceived was not easy owing to deer damage.

No doubt also weeding was not sufficiently heavy at first. Finance was difficult in the early years (after the "Geddes Axe" while Pritchard and perhaps other (local) officers as well were not in favour of heavy weeding. This may have contributed to the failure of European larch which must be kept in a vigorous state right from the jump if it is to resist what we now call "die back".

The choice of species on St. Audries was not happy. I minuted at the time that if those in charge had taken the trouble to look at and consider the adjacent Luttrell plantation, they would not have planted Douglas fir on the sea-ward face. The interplanting of this Douglas fir with Sitka spruce was rather a gamble but apparently it came off.

Planting in Coppice

The attached Memo. dated 24/4/23 is interesting as it relates to one of the earliest if not the first attempt to bring up conifers under tall coppice (and birch), a method which was applied in due course to large areas. Similar experiments were made at Bodmin and elsewhere. I would be glad if the Research Branch would look into this as part of their contribution to the History of Quantock Forest (See Appendix III).

R.

16/2/51

EXPERIMENTAL WORK

Planting of Coppice Areas

Quantock Estate.

The present procedure on this Estate is to clear-cut and burn the coppice at a cost of £4. 10s. to £5. per acre. As relief work the process has been very useful but in view of the fact that grants for relief work may not continue, it is desirable to put in train experiments in treating the coppice by cheaper methods.

1. Planting in Standing Coppice

With Messrs. Hanson and Lowe last week, I started an experiment on the following lines:

Some 3-4 acres of well stocked but rough coppice 30-35 ft. high was selected. On a small sample area the best developed stems - perhaps 400 per acre - were ringed. On this sample area Douglas is to be planted forthwith in lines 6ft. apart with the plants spaced 6ft. apart in the lines where possible, but not closer than 3ft. to a vigorous coppice shoot. The remainder of the area is to be ringed forthwith and similarly planted next winter. Costs of the ringing are to be kept - from the rate of progress in the small sample ringing should not cost more than 10/- per acre.

The success of the experiment would appear to depend on the realization of the following expectations:-

1. The ringing will kill the larger coppice shoots in 2 years and with the breaking of the canopy the weaker shoots will gradually die from exposure.

2. The Douglas planted under the coppice will gradually establish themselves during the first couple of years, will entail no cost in weeding and will suffer no damage from frost or drought.

3. With the gradual dying off of the coppice canopy more light will be admitted to the Douglas which will begin to develop accordingly.

4. By the time the leading shoots of the Douglas are among the branches of the coppice the latter should be dead or

4. practically bare of small side branches and twigs. There should consequently be little or no damage to the leaders from whipping.

5. The coppice if it shoots again will remain behind the Douglas and consequently be useful rather than the reverse.

It is improbable that all these expectations will be completely realized and probably some assistance will have to be given to the Douglas in due course.

It is not easy to foretell what this will amount to and alternative lines of after-treatment may arise. The sample plot should therefore be large so that it can be subdivided if necessary. Further, since the experiment will run on for some years, it should be registered and placed under the supervision of the Experiments Officer.

2. Planting in Felled Coppice

On the felled areas there is still far too much planting done right up against coppice stools. This entails either excessive weeding costs or the ultimate loss of the plant (as has occurred on considerable areas in Tintern Woods).

I have already dealt with this question in a separate Memo. on "Planting Conifers in Coppice Areas" but it is necessary to emphasise the point again that by careful spacing the new coppice shoots can be turned to advantage, and a saving in plants and labour secured.

I marked an area in this way with Messrs. Hanson and Lowe and I should be glad if a registered experiment could be started on the spot.

R.L.R.

24/4/23

INTRODUCTORY NOTE BY CONSERVATOR AND DISTRICT OFFICER

Prior to Acquisition the forest was a deer park; mostly estate woodland in the combes (chiefly scrubby oak) with a comparatively small acreage of deteriorating or neglected sheepwalk on the upper hill slopes and combe shoulders. The general appearance of the woodland was that of a fertile forest deteriorating progressively on account of the open nature of the woods. The woodland was felled over during and after the first world war and had not the Commission taken over, the whole would have rapidly become dominated by rhododendron with associated scrub.

The Commission's policy at the time was to clear out all coppice and rhododendron growth (heavy or otherwise) and replant practically the whole forest with quick growing conifers - chiefly Douglas fir, Sitka spruce, European larch, Scots pine, and Corsican pine. Big timber was anticipated on most of the sites since former plots had progressed very well on this and similar areas. The forest, at the same time, was to continue to be a deer hunt preserve.

The rate of planting was too ambitious and the plantations suffered - although not badly generally - from lack of adequate maintenance (coppice and rhododendron growth) and protection (deer). Cleaning, brashing and thinning arrears piled up during the last war, but the whole has now been adequately treated and practically the whole forest is now accounted for on the regular thinning programme. The adverse factors have not left lasting effects on the plantations generally.

The species are making splendid growth, quite up to expectation, generally, but with the notable exception of European larch, which has proved an utter failure on all sites. The cause of failure in this species is problematic. Douglas fir was taken too far up the slopes in places, and such sites have had to be beaten up and reconditioned with Sitka spruce and Corsican pine especially where sea-breezes are felt. The Oregon strain was superior to the Fraser river strain in early days, but there is not much to choose between them in older plantations. Japanese larch has progressed very well even on exposed sites and is the quickest species to establish itself. Norway spruce has done very well, also. Tsuga and Thuja (of which there

are small plots) have grown well but the thinnings have revealed butt rot.

The present policy is to introduce a large percentage of hardwoods (notably beech which makes good growth on the Quantock Hills even where exposed to sea breezes). This is a practice to be commended from the aesthetic and amenity standpoint, also Corsican pine seems to be the most promising species for the harder and drier upper-hill slopes and tops and combe shoulders. It stands up to the sea winds satisfactorily. Corsican pine is superior to Scots pine on the Quantock Hills. In the sheltered combes and lower hill slopes Douglas fir, Norway spruce, Sitka spruce and Japanese larch are excellent timber producers, but the use of problematic species, e.g. Tsuga and Thuja should not be made on a large scale until they have proven their worth. European larch unless a better strain can be found, can only be expected to progress satisfactorily when reared in a hard wood mixture.

The economic factor will receive great consideration with regard to preparation of ground in future. Some cultivation of non-woodland sites is desirable to speed up establishment. In future any existing woodland will be rehabilitated if it is considered that it will respond satisfactorily Such woods may then later be converted to plantations of more valuable species, e.g. beech, by progressive selective clearing and underplanting. The clearance of strong rhododendron by ordinary methods is now considered prohibitive as regard costs. Also to spread the cost of clearance of heavy coppice its retention and gradual removal as nurse cover (e.g. for beech) is to be advocated.

Planting programmes must be based upon the probabilities of efficient maintenance and protection and adequate protective measures instituted well in advance. Species and strains must be carefully selected and unsuitable substitutes must not be used in the event of shortages.

Some sites are especially favourable for rapid conifer growth and the possibility of the trees growing too fast and making inferior timber must be taken into account in the later thinning stages.

A. H. POPERT (Conservator)

A.W.L. GUILE (District Officer)

HISTORY OF QUANTOCK FOREST

GENERAL DESCRIPTION OF THE FOREST

Name.

This carried on the name of the lodge and estate to which a large portion of the forest once belonged and we trust it will honour the name of the hills on which it lies.

Situation and Area

The whole forest stands on the Quantock Hills of West Somerset. Rising quite sharply from the narrow coastal plain of the Bristol Channel about 4 miles west of Watchet, this three-mile wide band of hills runs in a south-east direction for some 12 miles to a point about midway between Taunton and Bridgwater.

The forest exists in three separate compact blocks:-

(I) St. Audries - 520 acres reaching the coastal plain at Quantoxhead.

(II) Quantock Lodge - 1560 acres, 2 miles south-east along the hill band from St. Audries; about $1\frac{1}{2}$ miles south-west of Nether Stowey.

(III) Halswell - 203 acres, about 4-5 miles further south-east on the south-east end of the Quantock Hills; about 4 miles south-west of Bridgwater.

The total area of the Forest is 2,283 acres.

Former Utilization and History

The land belonged formerly to estates, where sporting - especially deer hunting - was an integral part of rural life.

The financial burden of upkeep was, no doubt, the chief reason why these areas were turned over to the Forestry Commission. The estates could not maintain or replant woodland economically.

The St. Audries block was very much a deer reservation, but run in conjunction with rough hill sheep farming. Baron St. Audries reserved the small acreage of woodland for felling, conveying the land to the Forestry Commission, in 1926.

Most of the Quantock Lodge block, which mostly formed part of the Quantock Lodge Estate, was wooded, there being but a minor acreage of hill grazing on the ridges and upper mountain slopes. The Earl of Taunton was a former owner, but it passed into the possession of Mr. E.V.A. Stanley, who, prior to the outbreak of the first world war, maintained almost the feudal traditions of the estate. Mr. Gallimore purchased the estate in 1919 (a timber merchant of Stourbridge) and later sold it to the Somerset County Council, reserving the timber. The County Council turned the lodge into a sanatorium and leased the land to the Forestry Commission with pre-entry from 1922.

Apart from some 13 acres transferred from the Crown Taunton Estate, most of the Halswell block belonged to Lord Wharton of the Halswell Estate, and was used for general amenity. This combe was wooded at one time, but the trees were felled by the time the Commission acquired it in 1947.

Physiography

The forest lies on combe and ridge land and adjoining mountain upper slopes. The St. Audries block extends on to the mountain top. Altitudes are between 400 ft. and 1,100 ft., the steep-sided narrow combes varying from 100ft. in depth at Halswell to 400 ft-500 ft. at Quantock Lodge.

Drainage is naturally excellent.

Meteorology and Exposure

The climate is quite mild, generally, with warm moist summers and cool wet winters. Rainfall is about 40 in. per annum. Late frosts occur, especially in the combes.

The St. Audries block is wholly exposed to both land and sea winds, the two or three small combes running roughly north to south and opening to the sea.

The Halswell block is composed of a single sheltered combe running east to west.

The combes of the Quantock Lodge block run east to west from the low-land into the hills. They are sheltered largely from the prevailing south and west winds by the main backbone of the Quantock Hills, but the east winds get easy access to them. The ridges are fairly exposed and the upper mountain slopes even more so.

Geology and Soil

The underlying formation is Devonian Sandstone. Limestone is found on two or three of the east spurs at Quantock Lodge. The sandstone is near the surface and out-crops in a few spots on the upper slopes, but generally speaking there is a useful depth of dark red soil. There is a sandly-loam, stony, top soil some 6in. - 1 ft. deep passing into a more gravelly and stonier subsoil (1ft. - 3ft.) reaching down to the parent material. The colluvial soil of the lower combe slopes is deep and rich and there is some mild clay in the bottoms.

Vegetation at time of Acquisition

The St. Audries block was mostly rough hill grazing, much of which is still unplanted. The grassland carries strong bracken, generally with associated bilberry and occasional heather, ling, Nardus and gorse. Nardus is dominant in a few small parts, and gorse and heather where burning has been the practice. The small area of woodland was felled by the former owner and the sites handed over carrying a dense undergrowth of rhododendron.

Three parts or more of the Quantock Lodge area was woodland or woodland site occupying the combes. The ridges and upper mountain slopes were mainly derelict rough grassland with strong bracken and associated bilberry, heather, ling, Nardus and gorse. At the time of take over by the Commission there were three main woodland types present.

Firstly, areas devastated or felled during the 1914-1918 war, secondly a large area of rather open scrubby oak coppice with some beech and ash and sycamore from 5-40 years old, and thirdly, woods in the process of being felled by Mr. Gallimore, who reserved the timber for a period of five years. There were small fine stands of conifers (Douglas fir, European larch) and quite good oak and beech, 80-120 years old, growing in the valley bottoms and lower combe slopes. Rhododendron was widespread and increasing on the felled sites. Strong bracken covered most of the ground with frequent bilberry, increasing with the slopes and exposure, and with gorse, heather and ling coming in. The whole general appearance of the woodland was that of a fertile forest deteriorating progressively on account of the open nature of the woods.

The Halswell block was turned over after the timber had been felled. Much of the area bore a coppice regrowth of chestnut and sycamore, but the open and old conifer sites had gone back to grass with abundant bracken and bramble.

Risks

The forest adjoins poor, rough hill grazing and there is the usual danger from fire, rabbits, sheep and ponies. The deer population presents problems.

The surrounding hill land is much frequented by picnickers and trippers whose carelessness add to the fire risk.

The protection of plantations was closely bound up with the amenities (hunting etc.) of the district.

Animals

The boundary (Quantock Lodge) was ditch and hedge for the most part, with frequent gaps, and the whole was in dire need of repair at the time of acquisition. Some repair work was carried out in the early days.

Rabbits not being particularly numerous, rabbit netting was not extensively used - it would have been damaged, broken down and trampled by deer and the Hunt in any case. By employing a trapper and with the aid of shooting tenants the pest has been kept down and has not, generally speaking, caused measurable damage.

Sheep, ponies and deer have damaged plantations from the beginning until recent years. Until about 1932 very little objection was raised to the offending parties in order to ensure friendly relations. Improvement of the fences and hedges in the affected regions was generally successful in keeping out the 200 head or so of sheep, although trouble continued on account of gates being left open by the Hunt and visitors in general.

Some 100 head or so of ponies were kept by local farmers, and they, like the deer, had always been accustomed to roaming the forest. Improvements in fences, and a reduction in the number of entrance paths by blocking them with branches and gorse or allowing them to become overgrown, proved unsuccessful in keeping out ponies and deer. This was on account of the fact that gates were continually being left open, whilst the path and ride

blocks were often broken (probably by human effort). The animals were, in any case, in no way deterred by the presence of the blocks - they simply made fresh paths to reach their objectives. Strong approaches to the local farmers after 1932, with the threat of impounding, was effective generally, in stopping this trespass.

The deer have been a problem all along. There were some 250 head of deer roaming the forest (and the Quantock Hills at large) during the early days and the number was increasing. Deer fencing is an expensive item and such action would certainly have infuriated the hunters. Up until 1932 the Hunt, had been left alone to tackle the problem as they thought fit, and had been killing an average of only 25 head per year, but a strong approach by the Commission about that time coupled with a change in Master and Policy went far to improve matters. The suggestion that an experienced stalker be employed was rejected, and the Hunt undertook to increase the yearly bag to 50 by hunting and snaring. Also, new efficient hunting gates were supplied by the Hunt and erected by the Commission and fencing was improved, which helped considerably to protect the forest. Deer damage still continued, however, and the Hunt was pressed to increase their yearly kill by as much again. This the Hunt has done since the beginning of the war. There seems to be no record of the Commission having had to step in and reduce the deer population by driving and shooting - a policy to be avoided if possible, to ensure friendly relations, although it is quite entitled to take such action by the Lease agreement.

The forest has now largely grown up, and the deer damage danger is much less, but numbers should not be allowed to increase. Now that the forest has very little to offer as a feeding ground, deer are beginning to cause damage to the neighbouring farmers' property, making every use of the plantations as a cover and refuge.

The planting land at St. Audries was already largely surrounded by deer railings when the Commission took over. Deer damage was thus small. The railings made an excellent support for rabbit netting also.

Damage by sheep, ponies and deer was chiefly concentrated on some 200 acres in the Slades and Aisholt areas. Over the rest of the forest generally speaking, deer damage cannot be said to have been in excess of that to be expected from a minimum stock. The damage incurred was by

trampling (sheep and ponies), repeated pulling up of young plants at feeding spots and "play grounds" (ponies and deer), stripping off bark from young trees (1in. to 2in. in diameter and about 3ft. up the stem) of conifers and hardwoods (deer) and browsing upon hardwood leaves and shoots (deer and ponies).

This action tended to perpetuate the unevenness of crops, which would normally have been filled by beating up or by accepting hardwood coppice growth and regeneration.

Climate

Frost, snow and exposure caused local damage and diseases and the mis-choice of strain and, occasionally, species all had their effect. There was everywhere a tendancy to coarseness of growth on account of the wide spacing used.

The cumulative action of all the factors mentioned above, although usually of little effect individually, was to produce, generally speaking, uneven crops in height and stocking (more especially amongst the pre - P.28 plantings) up to the thicket stage.

Afterwards, however, under the generally very good growth conditions at the forest the plantations progressed remarkably well and it can be safely asserted that, on the whole, the adverse factors of early days have had no lasting effect upon the woods.

Fire

The forest has escaped measurable fire damage. (There have been several fires of less than one acre each caused by roadside and boundary picnickers). Protective measures have been screefing, ride cleaning and patrolling. Lately a plan was proposed for the establishment and per-petuation of boundary fire traces on adjoining Commission owned rough hill-grazing land at St. Audries. The plan recommended the cultivation of the trace sites and their seeding down to grass at Commission expense, and maintenance of the sward by sheep grazing. The local parishioners of Over and Nether Stowey, who are the reputed owners of grazing rights here rejected the plan. The bull-dozing of these traces was carried out, however. The fire tower erected near the Triscombe Stone at Quantock Lodge in recent years is no longer really necessary for this block now

that the plantations have mostly grown out of danger, but is still very useful for the St. Audries area.

Amenity and Public Opinion

The Quantock Hills are renowned for their beauty and amenity, and the local population jealously safeguards its heritage.

From the very beginning there has been considerable local opposition to enclosure and afforestation from an amenity stand point, for these hills are favourite haunts of the hunter, rider and rambler. The introduction of conifers on a large scale is not popular and the planting of the upper slopes, ridges and hill-tops condemned from the point of view of scenic beauty. Any "extraneous" erections are strongly opposed, and the cutting of existing ancient hedgerow trees (beech) is violently criticized out of amenity and sentiment.

A storm of protest has been raised by the local inhabitants against the Commission's intentions to acquire and plant further land at Quantoxhead.

Roads

Road construction was initiated in 1947. The principle generally adopted was that the main roads should follow the valleys. Some were aligned up the slopes to tap stands on the higher ground and others were built for access purposes. The main load system was supplemented by feeder roads and tracks. The details of construction are given in the following table:-

Forest Roads	Mains (miles)	Feeder (Miles)	Tracks (miles)
Cockercombe	.10	2.20	1.90
Ramscombe*	.65	1.35	-
Braggs	.70	2.65	-
Quantockcombe	-	1.50	.10
" extension	-	-	.40
Knackers Hole	.15	-	-
Park Road	-	-	1.10
Govetts Wood	-	-	.38
St. Audries	-	.30	.10
	1.60	8.00	3 .98

Grand Total 13.58 miles

The roads will also facilitate the transport of fire fighting equipment and personnel to the various parts of the forests.

Labour and the development of housing

When work started at Quantock Forest in 1922, about 108 men were employed. The labour was used mainly for planting and clearing oak coppice and for maintaining a seven acre nursery. This labour force of about a hundred men was retained till 1929.

After 1930 the labour staff was reduced to 30. Most of the planting had been completed and most of the coppice had been cleared and the reduced squad was used mainly on maintenance work. In 1933 the nursery was closed. In 1934 the labour force was further reduced to six men because of a severe cut in estimates. At this time a lot of fairly essential maintenance work was ignored. From 1935 until the outbreak of the war, 10 men were employed.

During the war the squad was increased to an average of 15 workers, of these 6 were women who were used mainly for brashing. A certain amount of produce was prepared during this period.

After the war, delayed work, such as brashing, cleaning and thinning, had accumulated to such an extent that the staff was increased to 40 in 1947 and to 70 in 1948 and this number was maintained till the middle of 1949 when most of the arrears in cleaning had been overtaken. The numbers were then reduced to 50. At this time, additional ground was acquired at Halswell and the squad of 50 was retained to cope with the extra work created by this new acquisition.

A fear that thinnings were being overdone necessitated a revision of the thinning plan. Work was curtailed and the staff was reduced to about 25 in 1950. This number is about the minimum necessary to maintain the thinning programme and to deal with all necessary maintenance work.

Because most of the staff live locally, the need for houses has not arisen, and as far as can be seen all that will be required will be a few houses for the outlier of Halswell.

SILVICULTURE

In his Working Plan of 1924 for the Quantock Lodge Block, Mr. C. O. Hanson recorded "The main object for the immediate future is to get the area covered with the most favourable species as rapidly as possible and to replace the coppice crops with valuable conifers, so as to get a normal increment as early as possible. This being a very favourable area for the growth of conifers to a large size and the area being situated far from rail which would make the export of pitwood expensive, the more distant object is to grow the greatest quantity of the most valuable species possible with the view to getting large timber suitable for the saw-mill".

No doubt the St. Audries block was regarded from the same angle.

The recently acquired Halswell block has been treated in accordance with the Commission's present policy.

It is presumed that the important amenity question was taken into account at Quantock Lodge and St. Audries, but no specific mention was made of it.

The forest has produced and continues to supply large quantities of pit props. The development of road transport has overcome the hauling difficulties and now that the Engineering Branch has made suitable forest roads and rides, extraction has been greatly facilitated.

The Plantations

Species present.

About 60% of the area has been planted with Douglas fir, the remaining 40% chiefly with European larch, beech, Corsican pine, Scots pine, Sitka spruce, Norway spruce, chestnut/sycamore coppice and a few acres of Thuja, Tsuga, Abies grandis and ash.

Planting programme

The greater part of the plantation area was planted between P.22 and P.29. The average annual programme P.22-P.24 was some 250 acres, P.25-P.27 160 acres, and P.28-P.29 120 acres. The ground was dealt with as rapidly as it was released by the timber merchant, Mr. Gallimore, up to 1925 after which the reservation expired. Later the poor wooded areas left by Mr. Gallimore had to be tackled and the annual programme naturally fell. Great use was made of the Government unemployment relief scheme.

Plants and Planting methods

Practically all the plants used at Quantock Forest were raised at a local nursery (a field adjoining Compartment 2, which was taken on annual lease from Mr. Tucker, the farmer, and finally surrendered in 1933). There is no reason to believe that unsatisfactory plants were ever used in any quantity at the forest.

Planting was done wholly with the mattock (until recent years) and this bit of cultivation in an already reasonably loose soil gave the plants as good a chance as any on the old woodland sites, and was especially beneficial on the rough grassland where there was a tough turf and generally harder ground. No doubt, ploughing would have been rewarded by better growth on these rough grazing sites but most of the land would have been too steep to plough.

Particular attention was given to planting operations in some areas of heavy rhododemdron growth, e.g. Douglas fir, Compartment 37, where the plants were semi-pitted with the mattock.

Planting distances were wide on the whole. Douglas fir and Sitka spruce 7 ft. x 7 ft. or even 8 ft. x 8 ft. on heavy coppice and rhododendron ground and 6 ft. x 6 ft. in clear ground. European larch was introduced at 6 ft. x 6 ft. in coppice and rhododendron and $5\frac{1}{2}$ ft. x $5\frac{1}{2}$ ft. on clear sites. The pines went in at $4\frac{1}{2}$ ft. x $4\frac{1}{2}$ ft. (rough grazing sites).

The spacing was not strictly adhered to in the coppice and rhododendron sites where numerous roots and stools had to be avoided. All sites were cleaned before planting. This must have been a most expensive operation, but there was some return on the sale of firewood.

Choice of Species

Douglas fir

This is the chief species by area at Quantock Forest. The possibilities of this species on the more sheltered combe slopes with deeper soil were confirmed by the examination of the two existing plots. One at Keeper's Combe, Quantock Lodge (Compartment 32) (felled before acquisition) was of Quality Class I at 36 years of age. The other situated at the Perry plantation, Perrycombe, Quantoxhead was Quality Class I at 24 years of age. On this evidence it was surmised that with proper sylvicultural treatment Quality Class I stands would be produced on such sites on long rotation.

The plantations were generally uneven in size and stocking before the thicket stage - especially those planted prior to P.26. The Fraser River type was mostly planted before that date and the early growth of this strain proved to be comparatively inferior at this forest. The Oregon strain, although more promising intrinsically, suffered severely from Chermes cooleyi attack up till about 1925. The Fraser River type was not thus afflicted and not even the Oregon Douglas above about 600 ft. where the wind is an inhibiting influence on the disease. Oregon strain was planted chiefly after P.25 and escaping the Chermes, made comparatively excellent growth.

Late beating up before P.28 seems to have been a contributing factor to the unevenness of the stands at this time, and the combined effects of the individually small damaging influence of coppice growth and rhododendrons, frosts, deer and ponies (in decreasing order of severity) helped to produce this effect.

The Douglas fir (mainly Fraser River type) at St. Audries was generally very poor and still required weeding in 1933. Exposure, especially to the sea winds was responsible, and already most of the stands had been beaten up or interplanted with Sitka spruce with favourable results. Similarly, exposure was too great for some of the Douglas fir at Quantock Lodge, where it seems to have been taken too far up the combe slopes (often to 800 ft. and 1000 ft.) on the Slades. At Compartments 47, 48, 49 on the Slades, the stands had suffered continuous heavy damage from deer, ponies and sheep and had been repeatedly beaten up with Sitka spruce which was the only species which stood up to the pony trespass, and which had now become by far the dominant species. A poor reconditioned plantation at Compartment 1 was partly felled by Home Grown Timber Production Department during the last war.

There was little or no trouble from honey fungus or Brunchorstia.

Growth was rapid on the better sites after the thicket stage was reached. The dominant and co-dominants maintaining a steady annual height increment of some 2 ft. 6 in. to 3 ft. on the Quality II sites and over 3 ft. on the best sites. Except at St. Audries and a few more exposed places at Quantock Lodge, there is every probability of large sized saw mill timber being obtained.

Sitka spruce

A comparatively small area of this species was used. It has made generally excellent growth all along in the combes and seems to be excelling the Douglas in volume production and growth, the dominants now putting on 4 ft. annual shoots on the best sites.

Sitka fares much better than the Douglas on the more exposed sites and is doing quite well at St. Audries where it puts up with the sea breezes. Large size timber is not likely to be produced on these exposed sites however.

This species was more susceptible to frost and honey fungus attack than the Douglas, but damage was not great. Young Sitka spruce suffered least of all from pony damage.

Scots and Corsican pines

These were chosen for the rough grassland areas (generally) on the harder drier sites of the combe shoulders and mountain slopes at Quantock Lodge and mountain top (Corsican pine) at St. Audries.

Measurements of plots in similar situations indicated that on the not too exposed sites Quality Class I timber crops (70 ft.) could be produced in the case of Corsican pine. Plots examined at Perry Plantations, Smith's Knap (adjoining St. Audries) on a low-lying site at Quantock Lodge Gates were Quality Class I woods at 20, 22, and 50 years of age respectively.

The plantations have progressed favourably from the start and are now in the early thinning stages and are quite promising. Corsican pine, P.24 at Compartment 25 has a mean height of some 35 ft. and since establishment, growth appears to have been regular year by year. Scots pine at Compartment 24 (P.23) has also a mean height of about 35 ft. and here again annual height increment has been fairly constant after establishment, the Compartment dominants now increasing by about 1 ft. 6 in. to 2 ft. per annum.

In one place at St. Audries and in Compartment 24 at Quantock Lodge, pine crops of about 30 years of age were felled not long before the Commission plantings were made and here beetle attacks were severe but were successfully combated.

The plantations escaped other pest and fungal attack. The young plantations on rough grassland near the forest boundary (Slades) suffered severely from deer, pony and sheep damage. Corsican pine is more susceptible than Scots pine.

Corsican pine is probably the most promising species at St. Audries and should have been used on a more extensive scale.

Corsican pine was found to be a more successful species than Scots pine on the whole and much reconditioning work on the harder soil types was done with this species.

European larch.

Some 250 acres of this species were used mainly on the higher ground (between the pine and Douglas zones) but there are also a few stands on the lower slopes.

This species was chosen on the strength of its former good performance at Quantock Forest. Plots measured at Compartments 45 and 33 were Quality Class I size (although badly cankered) at the age of 36 years, 56 years and 34 years, and there seemed to be every possibility of getting Quality Class I trees (80 ft.) with proper silvicultural practice. Acquired P.13 European larch mixed with beech in Compartment 37 is quite free from canker and has progressed satisfactorily.

However, the whole of the plantings with one or two mediocre exceptions, on low lying ground, e.g. at Compartment 34, have shown very poor development irrespective of position. Many acres at Quantock Lodge and St. Audries are little better than scrub. The plantations are fairly well stocked, but average little more than 20 ft. and are hardly anywhere of satisfactory form. Growth continues to be bad and there is no hope of their improving or even growing to much bigger dimensions.

The appearance of these stands was recorded as very poor in 1933, and since they were as well tended as the other species, and have always been generally free from canker, an explanation as to why they have failed so miserably compared with former European larch plantations is difficult to find. Some attempt was made to beat up with beech, Corsican pine and Sitka spruce, but these plants were practically all destroyed by grazing, weed growth and over-shading.

The future treatment of these woods is now under consideration.

Japanese larch

A small area of this species has been planted on sites similar to those on which European larch has been planted.

A former stand in Compartment 43 was 40 ft. high at 14 yrars of age and 4½ in. quarter girth and carried a volume of 1575 cu. ft. with 655 stems per acre.

The possibilities for this species appeared to be good, and the existing plantations certainly confirm them. Growing side by side with poor European larch in an exposed situation at 900 ft. (Compartment 45) there is an excellent stand of P.23 Japanese larch reaching up to 60 ft./70 ft. This species has shown regular growth since the thicket stage.

This species is the quickest to establish itself but does not kill out the rhododendron as quickly as Douglas and Sitka. The stands are still growing well but the production of large sound timber of good quantity is yet to be assured.

Japanese larch makes an excellent "catch-crop" on sites with heavy weed and coppice growth. It is, however, especially susceptible to deer damage.

Norway spruce

A rather small area has been planted with this species at Quantock Lodge. The plantations have done well and big timber will be obtained. The P.22 plantation at Compartment 29 is an excellent one. The mean height is about 50 ft. and annual height growth has been a regular 2 ft. 6in. - 3ft since the thicket stage.

Thuja

A stand of this species was planted in Compartment 18 (P.23) on a bottom combe slope. The original planting suffered a number of deaths and was beaten up with Sitka in 1925. The Sitka spruce has surpassed the Thuja in development and the stand is to be maintained as a mixed crop. The three thinnings have produced very valuable Thuja produce (ladder poles) but butt rot seems to have affected the crop.

The rot may be the result of suppression (such stems were largely removed in the thinnings) and is likely also to have crept in following the late removal of pseudo-coppice stems. The remaining trees look quite sound, but the production of healthy large timber still remains to be seen. Situated on rather a steep slope on well drained soil, overdryness of the site may be a contributing factor.

Tsuga

P.28 Compartment/11. This species developed very well and the height growth has been good. The stems are showing signs of fluting but there is no evidence of butt rot.

Research Branch Sample Plot in a 51 years old Tsuga plantation situated at Smith's Combe (approved acquisition at St. Audries) was thinned in 1950. Most of the butts were stained and one showed actual rot.

There is some very good natural regeneration of this species in an open plot of the adjoining pure European larch stand, the young seedlings growing quickly and vigorously.

Hardwoods

These species naturally suffer considerable damage from deer and ponies. At Quantock Lodge much natural coppice and regeneration of beech, ash and sycamore which would have been useful gap-filling agents in early years and which would doubtless have been encouraged to persist as a light mixture for aesthetic and soil improving reasons, was destroyed by browsing animals.

Ash/larch plantings on the lime-stone soils at Compartments 34 and 35 suffered severely, and the sites now carry mainly natural sycamore/beech poles and larch with a little ash.

At Halswell (combe slopes) acquired 1947, chestnut and sycamore have coppiced up well on the war-time felling sites. Most of this coppice has been considered good enough to rehabilitate. There has been no pony danger at Halswell and a minimum of deer about, to damage the hardwood.

Beech is likely to produce big, good timber at least on the more sheltered colluvial slopes.

P.13 plantations, pure and with European larch were acquired in Compartments 37 and 28. The trees have now grown to 60 ft./70 ft. and there is some 40 ft. of clean bole. Even in completely exposed places on the Quantock Hills, there are large sized rough trees to be found and old hedgerow coppiced stems are still putting on height increment in the teeth of the wind on the 900 ft. contour at Compartment 45 and, considering the bad treatment they have received all round, are also of reasonable form. Old large-size hedgerow beech exposed to the sea winds at St. Audries suggest that this species is quite well suited to maritime conditions. It must be borne in mind that most of the beech were planted on dykes, and

thus benefitted from soil cultivation and depth.

Most of Halswell has been planted with beech (P.49, 50) in the comparative absence of deer and ponies.

Future Species

Provided ponies and sheep can be excluded and deer kept down to a minimum a large proportion of hardwood (chiefly beech) can be introduced on the Quantock Hills. Beech would appear to be a good proposition even in exposed places and in the face of the sea breezes. The introduction of a substantial proportion of hardwood is to be recommended from an aesthetic and soil-improving standpoint.

Of the conifers, Sitka spruce seems to be the best volume producer on sheltered sites, closely followed by Douglas fir and Norway spruce. Too rapid growth might well make poor timber on the best sites. Sitka spruce grows well on more exposed sites and stands up well to sea winds. Corsican pine is also a good choice on exposed sites, and is probably the best species in the face of the salt breezes. Forestry Commission European larch is a failure everywhere. The cause is difficult to find as previous plantations seem to have thrived. It is suggested that the only safe way of introducing European larch is to mix it with hardwood. Japanese larch on the other hand makes an excellent "catch-crop" and gives good early returns, growing very well even on exposed sites. Its future with regard to production of large sound good timber on long rotation is still to be assured. Other conifers, e.g. Tsuga, Thuja, Abies grandis and silver firs do very well on more sheltered sites, but planting in large quantity will have to be avoided until the factors of susceptibility to pathological damage and soundness of the timber on long rotation are assessed,

Future Technique

Shallow/medium ploughing of rough grazing land, wherever gradients allow, would make for earlier establishment, except perhaps in gorse areas.

The clearing of heavy rhododendron growth prior to planting is almost prohibitively expensive. Tackling the problem by mechanical means may afford a solution.

Except where existing ground cover is to be preserved as necessary to protect plantations from exposure or frost, thorough cleaning at the time

of preparation of ground and clean weeding and expedient cleaning go far to ensure early establishment and regular plantations.

Adequate protective measures must be put into operation from the beginning if considerable damage is to be avoided.

The institution of carefully thought out fire plans, subject to continual amendment and review have gone far to reduce the cost of fire protection whilst at the same time making for efficiency. The establishment of boundary fire traces on adjoining rough grazing land seems a most effective protective measure. Such traces on cultivation should be put down to grass and the sward maintained by grazing etc.

The planting programme should be governed in the first instance by the probability of efficient maintenance and protection, and unsuitable species should never be used in the event of shortages of the species that would normally be used.

The formation and maintenance of a Working Plan and records is an essential for efficient management.

There are three main types as regards treatment:-

(a) Plantations which will produce large sized timber of fine quality. The policy here is to produce final crop stands of big timber.

These plantations (Douglas fir, Sitka spruce, Japanese larch) are growing very quickly in height and in girth where they have sufficient room, and most stands have passed the third thinning stage.

The treatment is to thin rather heavily on a five year rotation, giving the final trees plenty of room to increase in girth as soon as sufficient height is attained. The final crop stage will be reached comparatively quickly.

On the very quick growth sites there is certainly a danger of too rapid girth increment producing inferior timber. Thinning grades must be very carefully worked out in such stands.

(b) Plantations where large sized timber of fine quality is not likely to be obtained.

The establishment of the final stands will occur later in the life of the crops than in (a) and thinning grades will be less heavy and designed more to produce the best intermediary produce (e.g. pitwood). A three

year rotation is advisable in earlier years, but a five year interval will be more suitable after the third thinning or so to ensure that an economic quantity of produce be obtained at each visit.

(c) The European larch Plantations

A few acres are progressing satisfactorily and will be given "normal" thinnings. The majority of the stands, however, have failed or are rapidly dying back. They are of very poor form and often scrubby, the height varying from 10 ft. to 30 ft. according to site at an age of about 25 years. These woods cannot be carried on economically as European larch plantations.

The following treatment is suggested. Thin out to a minimum stocking necessary to take an underplanting of beech or Sitka spruce (according to site). Remove the worst stems first, retaining the better ones to put on what increment they will. The removal of the overstorey will take place in accordance with the demands of the underplanting - again favouring the best and removing the poorer trees.

Maintenance of Plantations

The planting programme was a little too ambitious, and there was difficulty in keeping the whole forest thoroughly weeded and cleaned. Naturally with a labour shortage during the war, cleanings ran into arrears, whilst brashing and thinning requirements rapidly increased.

Also, up until P.28 beating up was delayed, but was tackled thoroughly afterwards. A small nursery was established for the purpose of producing large sized strong transplants at Parish's Lodge in 1933, whilst "flying Sitka spruce turf nurseries" were formed in the neighbourhood of plantations which required beating up with that species (e.g. the Slades). The plants were well planted, from all accounts, by pitting and semi-pitting.

Thinning

This was a minor operation pre-war, but during the war, areas began to accumulate and by 1946 practically the whole of the planted area required treatment, The brashing and cleaning requisites were speedily made good and an intensive thinning programme was put into operation. Thinning grades were generally and necessarily fairly heavy at first, to prepare the way for a normal thinning cycle, which has now largely been reached.

The areas thinned year by year are given in the following table:-

F.Y.	Hardwoods		Conifers		Total		
	1st thin	2nd etc. thin	1st thin	2nd etc. thin	Hwds.	Cfs.	Total
33				8		8	8
37				8		8	8
39			16			16	16
40	1		15		1	15	16
41			3	10		13	13
42			45	10		55	55
43	25		47	6	25	53	78
44			65	13		78	78
45			55	29		84	84
46		2	52	60	2	112	114
47	7		237		7	237	244
48	10		852	179	10	1031	1041
49			20	496		516	516
50				320		320	320
Total	43	2	1407	1139	45	2546	2591

It is unfortunate that no volume records can be traced, except for F.Y. 50 when the 320 acres of second and third thinnings realised some 38,021 cu. ft. (i.e. slightly below 120 cu. ft. per acre).

The produce has been mainly pitwood with associated poles, stakes and firewood and a substantial quantity of telegraph poles.

To-date the thinning programme has been worked on a three-year rotation.

Research

Leader damage

An experiment was laid down in Douglas fir at Quantock Lodge at the time of planting to measure the effect of leader-loss. In the first plot the leaders were cut off, in the second all the side branches of the top whorl were removed but the leaders were left, and the third plot formed a control.

The location of the experiment is not exactly known, but after traversing the area, no contiguous plots showing differences in form and growth which may have resulted from shoot amputations have been discovered. This confirms the observation that on removal of the leader, a side branch of the top whorl responds hormonically and grows up to take the leader's place.

Deer and Pony damage. Deer fenced cages were established in young plantations to assess the damage done to neighbouring unprotected crops. The experiment showed that useful hardwood coppice was being destroyed by browsing, which would otherwise have helped to fill up gaps. With the elimination of trampling and bark stripping, beat up plants fared well and a better crop was being obtained.

Sample plots. The Research Branch have established thinning grade and thinning yield plots in Sitka spruce and Douglas fir (Compartments 12 and 51 respectively). The effect of high pruning is also being investigated. The plots were established in 1947 and it is too early as yet to draw any conclusions.

Poplar Race Experiments. The valley bottom at Halswell is being used (since 1949/50) by the Research Branch for poplar variety experiments one of a series which is being set up in different parts of the country. The purpose is to compare the growth of a large number of poplars under varying climatic conditions. It is too early yet for the trial to have given any results.

APPENDIX

Reports of principal visits, Inspections, etc. (to which reference has been made).

Date	Officers
18.6.24	Working Plan (C.O.Hanson, Divisional Officer)
1.9.32	Chairman's Tour (Sir Roy L. Robinson)
- 6.33	Division Officer (Mr. O.J. Sanger attached to the H.Q.)
12.7.33	Assistant Commissioner (Mr. W. L. Taylor)
1.2.34	Commissioner (Sir Alexander Rodger)
13.2.34	Report on Protection (Mr. W.L. Taylor, Assistant Commissioner)
18/19.8.37	Chairman (Sir Roy L. Robinson)
4.8.39	" " "
4.6.40	Sir John Sutherland and Assistant Commissioner (Mr.A.P.Long)
10/11.4.43	Chairman's visit (Sir Roy L. Robinson)
26.7.44	Chairman's visit (Sir Roy L. Robinson)
28.7.45	Chairman's visit (Sir Roy L. Robinson)
7/9.3.45	Acting Assistant Commissioner (Mr. A.P. Long)
6.10.46	Director (E) (Mr. O.J. Sanger)
29.5.48	Director (E) (Mr. O.J. Sanger)
22.10.48	Commissioners' Tour
30.7.49	Chairman (Lord Robinson)
31.7.49	Chairman (Lord Robinson)

Extracts from selected Inspection Reports

1.9.32 - Chairman's Inspection. A quick inspection was made of St. Audries. The Chairman recommended that all old plantations be made good using Sitka spruce as this was about the only species not affected by pony damage. Turf nurseries were to be established to be used in beating up the old plantations. Large beech were to be considered for beating up the older plantations of Douglas fir and European larch. Where Sitka has been killed by honey fungus try replacing with pit-planted Douglas fir, specially grown to a large size.

The Chairman noted that the report made no mention of deer or of ponies. With regard to the former he understood from Mr. Scott that the numbers were increasing rapidly owing to the failure of the Hunt to shoot. If this were

so the Commission might be subjected to considerable damage in the immediate future. Measures should consequently be taken in consultation with the Hunt to reduce the stock. As regards ponies a good deal of damage had been done and was still going on, but he thought it should be possible to keep them out of some areas by blocking the too numerous paths. This procedure was discussed on the ground.

With regard to beating up, honey fungus killed Sitka with Douglas; the procedure would not of course apply to wet or soft ground. The Douglas need not be very large plants but they should be well-developed and planted carefully.

The Chairman pointed out also that in his opinion a small nursery area should be maintained on the area as plants would certainly be required for some years to come. He understood that there was a suitable area near the forester's house.

Another point was the Douglas planting at St. Audries which was doing badly. If the officer who arranged the planting had taken the trouble to look at the adjoining plantations belonging to Mr. Luttrell he would never have planted Douglas.

18.8.37. Chairman's Inspection

P.23 European larch. This area was not satisfactory. The stocking of the larch was gappy and, even where beaten up with Sitka spruce, the Chairman observed that a rough crop would be obtained on account of the disparity in size. If weeding had been satisfactory from the start, a satisfactory crop would have resulted. No further treatment was now possible. On the south west edge of this compartment, the Chairman noted that extensive browsing by deer had been going on affecting the growth of natural beech and oak coppice.

P.25 Douglas fir, Compartment 47. This portion of the Compartment had been beaten up with Sitka spruce which had now started coming out of check.

P.29 Abies grandis, Compartment 43. This plot had suffered very badly from deer damage.

Natural ash and sycamore. The Chairman remarked on the extent of the browsing by deer on the younger ash which had been cropped to a uniform

height of about 4 ft. 6 in. and their development arrested.

P.23 Scots pine, Compartment 22. This area was examined from the point of view of its requiring a coppice cleaning and in the portion examined, Sir Roy pointed out that the removal of coppice would only liberate partially suppressed Scots pine which in most cases would ultimately be suppressed in any case by neighbouring pine and that by leaving the coppice a much more effective cleaning of the Scots pine would be obtained. Similar areas would have the coppice left.

P.46 Douglas fir, Compartment 1 St. Audries. Every second row had been interplanted with Sitka spruce in F.Y.32 as it was feared from the state of the Douglas that this species would go out. In the lower sheltered portions the Douglas averages 10 ft./12 ft. while the Sitka range from 2 ft. to 8 ft. In some cases the Sitka would come into the canopy without much assistance, in other cases, cutting of Douglas fir branches would be necessary. The Chairman did not consider that we should try to bring through all the good Sitka spruce at the expense of drastic treatment of the Douglas fir.

Chairman's minute on Inspection of 18.8.37

"As the result of my inspection of August 18th I am concerned about the damage done by deer. It appears that ponies, rabbits and sheep are under control and I saw no appreciable damage. On the other hand, deer damage was widespread and progressive. There is not only the obvious rubbing and browsing as in the Slades but throughout the woods there is browsing of planted hardwoods, natural regeneration and coppice. The result is that plantations in which we might in the ordinary way have relied on broadleaved growth to complete the canopy are very gappy. There is a somewhat insidious form of damage which is nevertheless important.

In my opinion we are not justified in allowing the damage to continue. We have given the hunt ample opportunity to deal with the matter and they have not done so.

It seems therefore that we must do as we have done in other parts of the country and ourselves reduce the head of deer to a point where they do no appreciable damage. This may very well cause trouble locally and careful consideration must be given to the way in which it is to be done".

4.8.39 Chairman's Inspection

P.23 Japanese larch C.45. This area had been given a light first thinning, which was considered satisfactory. Sir Roy instructed that a second thinning should be carried out in 2 years time and stressed the importance of frequent thinnings in Japanese larch in order to maintain a rapid development of the tree. It was noted that there was a good demand for the produce at prices which gave a substantial margin of profit. P.23 European larch had not reached the brashing stage and was poorly stocked.

P.27 European larch in beech and oak coppice, beat up Japanese larch P.34.

This area contains No.3 enclosure against deer and the Chairman noted the great improvement of the coppice within the cage.

He indicated that outside the enclosure a successful crop would not ensue as the assistance of the beech and oak coppice and maidens would be required to give a close enough stocking and that this could not be obtained without the exclusion of the deer.

Sir Roy considered that the Hunt had been sufficiently warned as to a considerable reduction in the head of deer and that the time had come for the Commission to take the matter into their own hands. The numbers might be reduced by shooting, harrying and snaring.

He also considered that it would be necessary to erect a deer fence right round Compartment 40 in order to obtain a reasonable crop, and he thought the Hunt might be asked to bear the cost.

11.4.43. Chairman's inspection

A general view of the area was had from the road and it was seen that the Douglas fir in Compartments 1 and 2 were still very blasted by sea winds. The interplanted Sitka were now coming through and should give a reasonable crop. The P.26 European larch in the Combe were now coming away and had not suffered unduly from wind; a very light thinning had been made in the most advanced portions. Sir Roy stressed that thinning should not be neglected and he was anxious that underplanting should be undertaken as soon as practicable on the higher slopes; development was poor.

Chairman's minute :-

"The plantations generally are receiving careful attention and successful efforts are being made to dispose of all produce. I was interested to note that Mr. Ballance thinks even more could be done in this direction if more labour were available and there was time to devote to marketing.

The various species are now beginning to demonstrate their suitability to local conditions. Douglas fir seems to get over Chermes attacks about the 12th-13th year and then grows well. Japanese larch on the whole shows rapid growth. Sitka spruce grows amazingly on the better soils and damper places. I got the impression, but could not confirm it, that backward Sitka spruce areas (generally speaking coppice on dry slopes) were improving. European larch seems indifferent to bad almost everywhere. Scots pine shows better growth on some of the higher land than I would have expected. Corsican pine grows even better.

There seemed to be less deer damage but it was distressing to find that netting is necessary in replanting small areas.

The St. Audries area has improved since my last visit but it is still ragged owing to the original faulty selection of species."

26.7.44 Chairman's inspection

This visit was concerned mainly with the inspection of thinnings in the older plantation. The thinning grades were generally approved. The P.29 Douglas fir had had a hard struggle against rhododendrons but it was observed that, although the rhododendrons were extremely dense and had a height of 8 ft. to 10 ft, the Douglas had got through. The plants were, however, very spindly. To clear the area would be a costly job and it was doubtful if the Douglas being so spindly would stand. The Chairman instructed that apart from racking for protection and access, nothing should be done. He considered that eventually the Douglas would close canopy above the rhododendron and kill it out.

Chairman's minute :-

"The plantations are being intelligently handled and show steady improvement.

No mention is made of an older European larch/beech plantation below the road near Compartment 28. It requires an urgent thinning and is not to be clear felled in spite of symptons of butt-rot."

30.8.49 Chairman's inspection

The slow growth of Scots pine through dense rhododendrons was inspected. The rhododendrons had been little affected by such growth. The poor growth of the P.28 European larch especially among the rhododendrons was noted. This crop should be allowed to remain and no substitute species introduced as such expenditure can be more justifiably incurred elsewhere.

The Chairman's minute :-

"There seems to be a tendency to over-thin some of the coniferous plantations .....

The rhododendron problem is to receive investigation. It is not primarily a business for engineers but for silviculturists ....."

APPENDIX II

Record of Staff

Divisional Officers	Period
Mr. C.O. Hanson	1922-1932
Mr. F. Scott	1932-1945
Mr. J.E. James	1946-1946

District Area Officers	Period
Mr. R.G. Broadwood	1938-1939
Mr. R. H. Smith	1939-1940
Mr. R.G. Broadwood	1940-1943
Acting Mr.J.E. James	1943-1945

Conservators	Period
Mr. A.H. Popert	1946-to date

State Forest Officers	Period
Mr. G.F. Ballance	1946-1949
Mr. J.B. Stocks	1949 to date

District Officers	Period
Mr. W.D. Russell	1926-1934
Mr. R.G. Broadwood	1934-1938
Mr. G.F. Ballance	1938-1944
Mr. Ind	1944-1944
Mr. C.H.R. Hillman	1944-1946
Mr. D.N. Williams	1946-to date

Foremen in Charge	Period
Mr. A.W. Wallington	1922-1924

Foresters		Period
Mr. A.W. Wallington	II	1925-1933
Mr. Laney	II	1933-1939
Mr. T.N. Middleton	II	1939-1944
Mr. G. Scott	II	1944-1946
Mr. E. Fairman	II	1946-1948
Mr. G.A.Jenkinson	II	1948-to date

APPENDIX III

An Assessment of Early Plantings of Douglas Fir Under Tall Oak Coppice

The trial plantings of Douglas fir under tall oak coppice carried out in F.Y's 24 and 26 were small scale and experimental, with the object of discovering a cheaper way of establishing a coniferous crop on old coppice areas than the clear cutting and burning followed by weeding for several years which was then the usual procedure.

Unfortunately no records have been kept of either the costs or of the development of the Douglas fir crop so that accurate comparison with crops established by the normal methods is not possible; however a study of the evidence presented by the coppice stools and the crop trees has gone a little way towards supplying a history of these experiments.

There are five plots, each $\frac{1}{2}$ - 1 acre, irregularly shaped, and divided between three compartments; in all cases the planting lines were 6 ft. apart and spacing in the lines was 6 ft. where possible but in no cases were plants put in closer than 3 ft. to a vigorous coppice shoot. This meant that spacing in the lines was frequently 10 ft. or more and the average density of planting was about 800 per acre.

This experiment was designed to compare the results and costs of two different ways of manipulating old oak coppice from 30 - 35 ft. high. The treatments were as follows:

Treatment 1. Clear cutting the coppice and planting with Douglas fir; no weeding at all was carried out after planting and the Douglas were left to compete as best they could with coppice and rhododendron regrowth. The result was that most of the Douglas fir were dominated by regrowth soon after planting, about 20% of the original plants are still alive but at 25 years of age their mean height is 25 ft. About 3% - 5% of the plants got away successfully and their mean height is now 35 ft.

Oak and rhododendron are dominant over most of the area and the growth and spacing of the surviving Douglas are very irregular; crown development is poor and most trees lack vigour.

Two plots, of which one was assessed in detail, were devoted to this treatment which must be considered unsatisfactory.

Treatment 2. Some 400 per acre of the best developed oak stems from 30-35 ft. high were ringed and Douglas fir planted underneath the coppice. Apparently the original intention was to leave the conifers to compete with the remaining coppice without further tending, but in fact the coppice was given a heavy cleaning about 20 years later leaving only a few straight and slender oaks with small crowns. The Douglas fir canopy has now closed and will not permit any further significant regrowth of oak though many stools are still alive.

Survival of the original plants was nearly 100% and well grown trees are now distributed quite evenly giving sufficient selection for a final crop; the mean height is about 35 ft. so that the Quality Class of the crop is very low but this is probably a reflection of the site factors rather than of the treatment.

The butts of the two felled stems were examined; one of them showed very even growth while on the other a response to cleaning the oak coppice had resulted in a sudden increase in ring width. The form of stem is good, branches are relatively light, and the crowns are narrow.

Silviculturally this treatment has been successful in producing a fully stocked crop and although there are no records of the costs involved there can be little doubt that the costs of the original ringing plus one weeding in the coppice would have been substantially lower than the costs of complete clearance of the coppice plus the essential weedings resulting from normal practice.

The development of this plot appears to have been along the following lines:-

1. The girdling killed the larger coppice shoots in 2-3 years, and the new sprouts did not start for a similar period.

2. The Douglas planted under the coppice established themselves during this time but entailed no cost in weeding and suffered no damage from frost or drought.

3. With gradual dying off of the coppice canopy more light was admitted to the Douglas fir which developed accordingly. The remaining coppice stems also responded to the opening of the canopy and increased their growth rate.

4. By the time the leading shoots of the Douglas were among the branches of the girdled coppice the latter were dead and there has been little or no damage from whipping.

5. The remaining coppice stems grew at nearly the same rate as the Douglas fir so that after about 20 years a heavy cleaning was necessary to relieve the crop.

Two plots, both of which were assessed, were devoted to this treatment; variations in the height at which the coppice stems were ringed and in the time of cleaning the oak coppice were observed and are referred to in the detailed descriptions of the plots.

Treatment 3

In a small plot, presumably established as a control, Douglas fir had been planted underneath the untouched oak coppice; no trace of the conifers can now be seen.

Choice of Species

The particular species selected for planting under the treated coppice should have the following characteristics:-

1. Must be shade bearing, at least when young.

2. Should close canopy quickly and cast a shade dense enough to suppress the coppice re-growth.

3. Should be capable of developing into a valuable crop on the site in question.

Douglas fir fills the first two requirements satisfactorily but on the sites studied it is doubtful whether it will produce a crop better than Quality Class V. Two typical dominant trees were felled and examined and their rates of growth were found to correspond with the curve for Quality Class V for Douglas fir, in the general Forestry Commission tables for this species. The slow initial growth of the felled Douglas may have been due to the fact that they were growing under shade; but for the last several years they have been in full light and their growth rates continued to be relatively low for this species. The main factors causing this poor growth are probably the high relative elevation of the sites, the degree of exposure, and the acid reaction of the soils.

It seems likely that Tsuga would have fulfilled all the requirements of the underplanted coniferous crop and would in fact have been a better choice than Douglas fir.

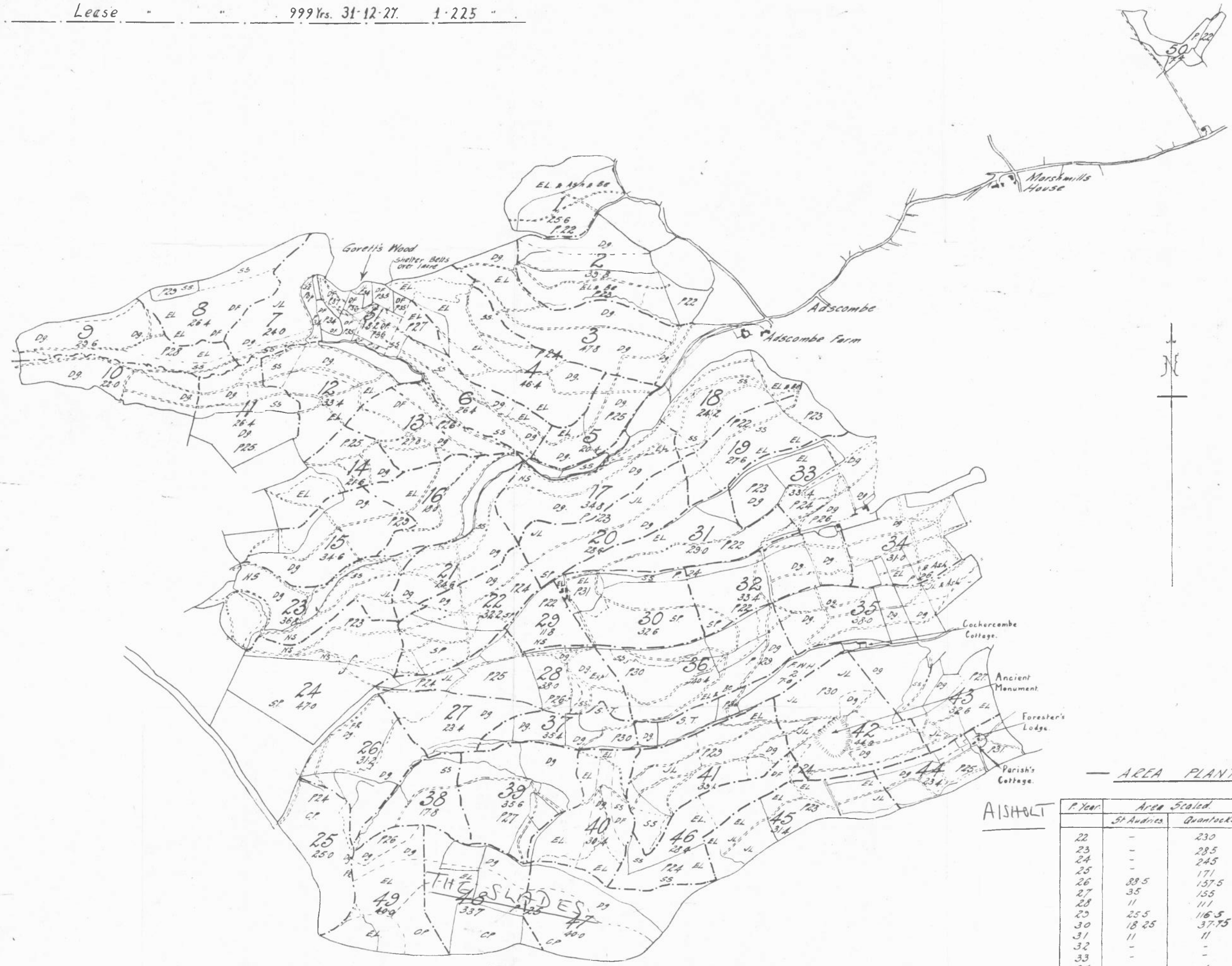
A.D. Miller.
Asst. Silviculturist (S)
22.8.51.

Quantock

— QUANTOCKS —

Somerset 49W

Quantocks Lodge Estate.	Lease from Somerset CC.	999 Yrs	31.12.27.	1540.569	acres.
Gorett's Wood.	"	"	"	18.216	"
Cockercombe Cottage.	Purchase	"	"	31-8-37	1.045	"
Parish's Cottage.	Lease	"	"	999 Yrs. 31-12-27.	1.225	"



— AREA PLANTED —

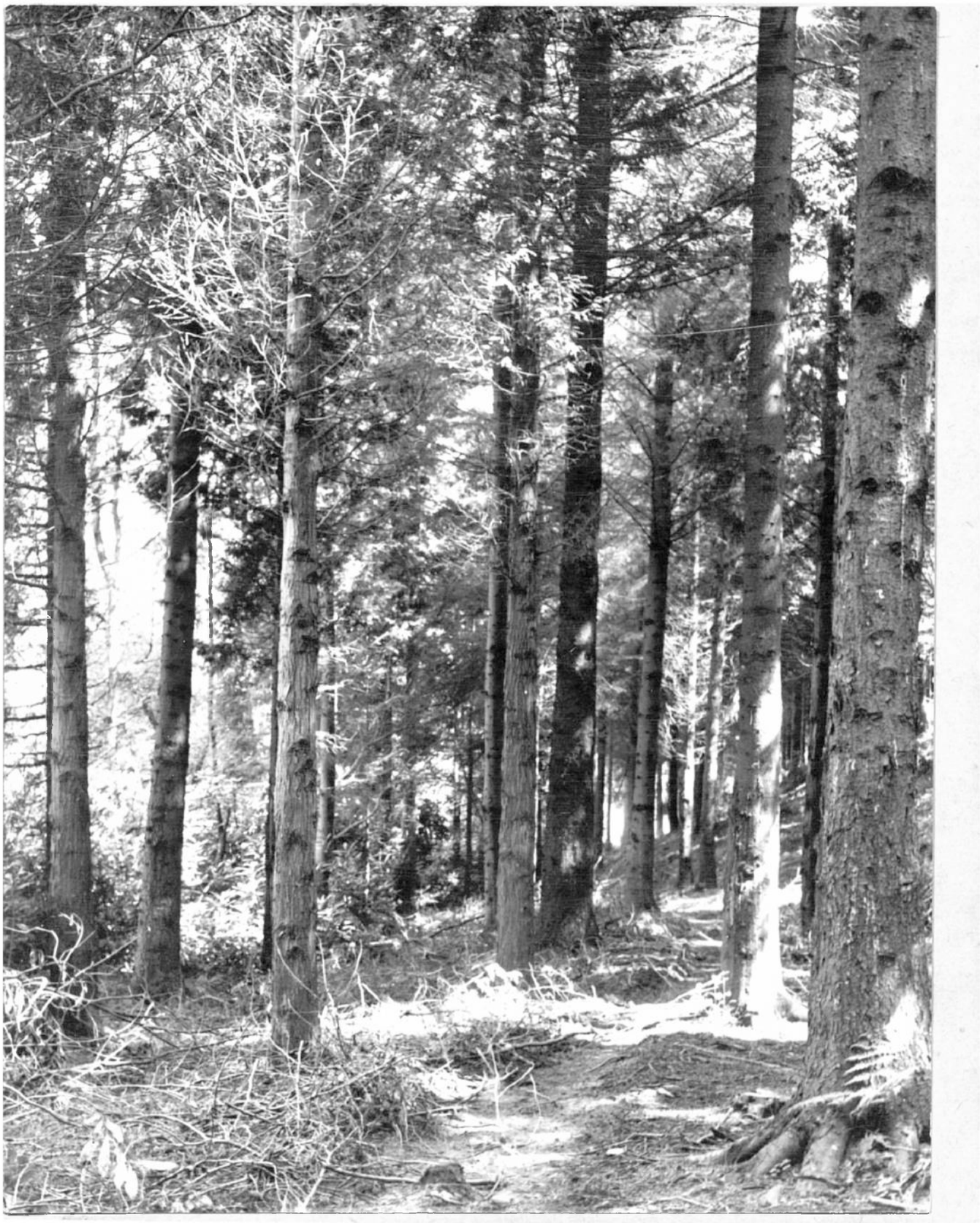
P.Year.	Area Scaled. St Audries.	Quantocks.	Total	A.R. (acres)
22	-	230	230	253
23	-	285	285	232
24	-	245	245	240
25	-	171	171	200
26	88.5	157.5	246	252
27	35	155	190	190
28	11	111	122	122
29	25.5	116.5	142	142
30	18.25	37.75	56	56
31	11	11	22	22
32	-	-	-	-
33	-	-	-	-
34	-	4	4	4
Total.	189.25	1523.75	1713	1713 acres
35	-	4.4	1717.4	1717.4
36	-	5.5	1722.9	1722.9
37	-	3.8	1726.7	1726.7

Scale:- Six Inches - One Mile.

Quantocks — Halswell

Somerset 61 N.W. & S.W.

Scale: 6 inches to 1 Mile

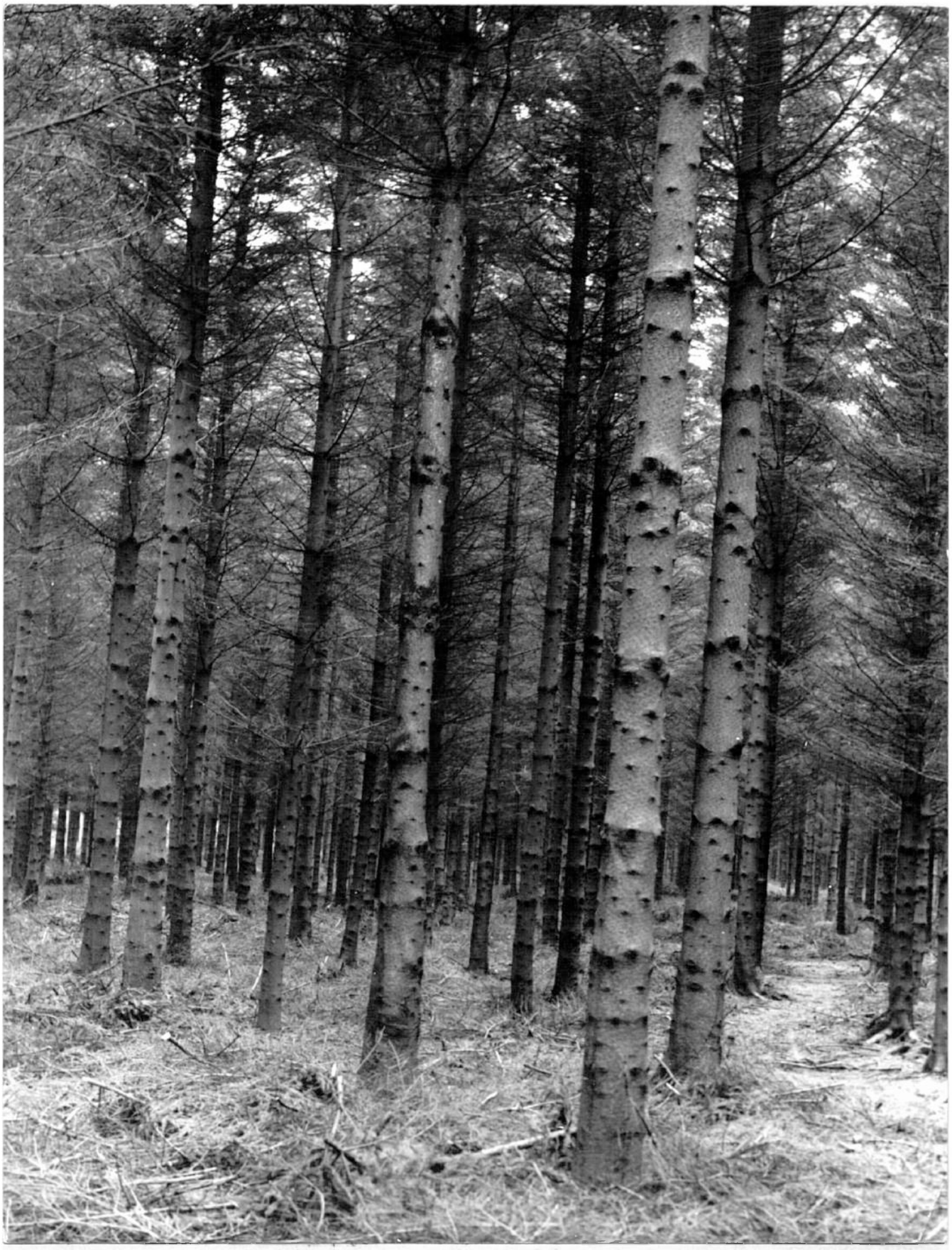


Forest History - Quantocks

1.

Compt.	18	
Species	Thuya & S.S.	
Age	P.22 & P.25	
Diam. B.H.	Thuya 9"	S.S. 12"
Tree Ht. max	Thuya 55'	S.S. 70'
Tree Ht. av.	Thuya 50'	S.S. 60'
Vol. (av. pole)	Thuya 7 cy. ft.	S.S. 15 cu. ft.
Vol. per acre	Thuya 2660 cu. ft.	S.S. 1050 cu. ft.

Remarks: Mixture of S.S. and Thuya. Thuya is P.22 and was beaten up with S.S. in P.25. Eventually a pure S.S. crop is visualised. Butt-rot in Thuya is not much in evidence yet.



Forest History - Quantocks

2.

Compt.	29
Species	N.S.
Age	P.22
Diam. B.H.	6"
Tree Ht. max.	45'
Tree Ht. av.	40'
Vol. (av.pole)	4 cu.ft.
Vol. per acre	2000 cu.ft.

Remarks N.S. P.22. Thinned 3 times and high pruned. Has produced a large revenue approx. 150 per acre up to date in Telegraph Poles, Pitwood and Xmas trees. Altitude 900 ft.

Forest History - Quantocks

3.

Compt.	32
Species	S. S.
Age	P. 24
Diam. B.H.	7"
Tree Ht. max.	65'
Tree Ht. av.	55'
Vol. (av. pole)	7 cu. ft.
Vol. per acre	3150 cu. ft.
Remarks	S. S. P. 24 in Kennel Combe. High pruned 150 per acre (approx).

Forest History - Quantocks

4.

Compt.	33
Species	F.R. Douglas
Age	P. 24
Diam. B.H.	5"
Tree Ht. max.	40'
Tree Ht. av.	35'
Vol. (av. pole)	3 cu. ft.
Vol. per acre	1650 cu. ft.
Remarks	D.F. (Fraser River), P.24, showing the poor development of this variety.

Forestry History - Quantocks

5.

Compt.	35
Species	S. S
Age	P. 22
Diam. B. H.	14"
Tree Ht. max.	70'
Tree Ht. av.	65'
Vol. (av. pole)	20 cu. ft
Vol. per acre	5000 cu. ft.

Remarks S. S. P. 26., which was beaten-up in a small D. F. P. 22 area. This shows remarkable growth and was planted in a small strong Bracken area. Spiral cracks shown. The present Forester depicted.

Forest History - Quantocks

6.

Compt.	35
Species	D.F.
Age	P.22
Diam. B.H.	9"
Tree Ht. max.	65'
Tree Ht. av.	60'
Vol. (av. pole)	9 cu. ft.
Vol. per acre	3150 cu. ft.

Remarks D.F. P.22., which was originally planted at 7' x 7' in Cockercombe. High pruned 150 per acre.

Forest History - Quantocks

7.

Compt.	35.
Species	Ash & Sycamore
Age	P.26
Diam. B.H.	5"
Tree Ht. max.	40'
Tree Ht. av.	35'
Vol. (av. pole)	3 cu. ft.
Vol. per acre	1500 cu. ft.
Remarks	Small area of naturally regenerated Ash and Sycamore P.26 at entrance to Cockercombe.

Forest History - Quantocks

8.

Compt.	37
Species	Beech
Age	P.00
Dian. B.H.	8"
Tree Ht. max.	60'
Tree Ht. av.	50'
Vol. (av.pole)	5 cu.ft.
Vol. per acre	1750 cu.ft.

Remarks A small area of acquired beech in Cockercombe, showing the possibilities of this species. Age approx. 35.

Forestry History - Quantocks

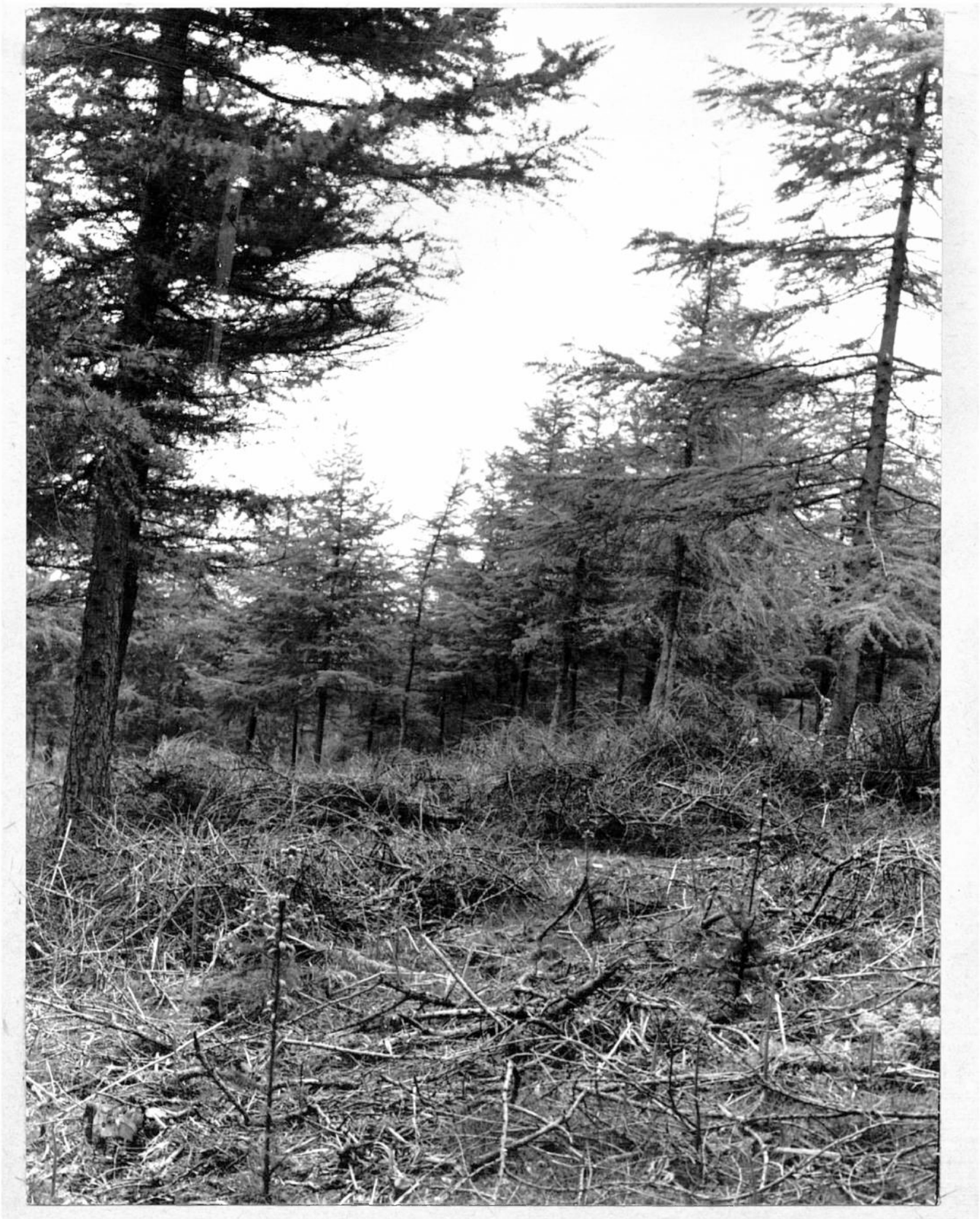
9.

Compt.	43
Species	Silver Fir
Age	P.27
Diam. B.H.	8"
Tree Ht. max.	60'
Tree Ht. av.	54'
Vol. (av.pole)	6 cu.ft.
Vol. per acre	2700 cu.ft.
Remarks	Abies grandis P.27. High pruned 150 per acre.

Forest History - Quantocks

10.

Compt.	45
Species	J.L.
Age	P.23
Diam. B.H.	8"
Tree Ht. max.	55'
Tree Ht. av.	48'
Vol. (av.pole)	6.5 cu.ft.
Vol. per acre	2405 cu.ft.
Remarks	J.L. P.23. Altitude 900 ft. and very exposed to the S.W.



Forest History - Quantocks

11.

Compt.	48
Species	E.L.
Age	P.25
Diam. B.H.	3½"
Tree Ht. max.	20'
Tree Ht. av.	15'
Vol. (av. pole)	1½ cu. ft.
Vol. per acre	600 cu. ft.
Remarks	E.L. P.25. Altitude 1000 ft., and very exposed

Very poor crop, planted on Calluna/Pteris area. Reconditioned in P.52 by planting large S.S. in appropriate groups. The better larch have been retained, leaving a modicum of inferior trees for overwood shelter.

Forest History - Quantocks

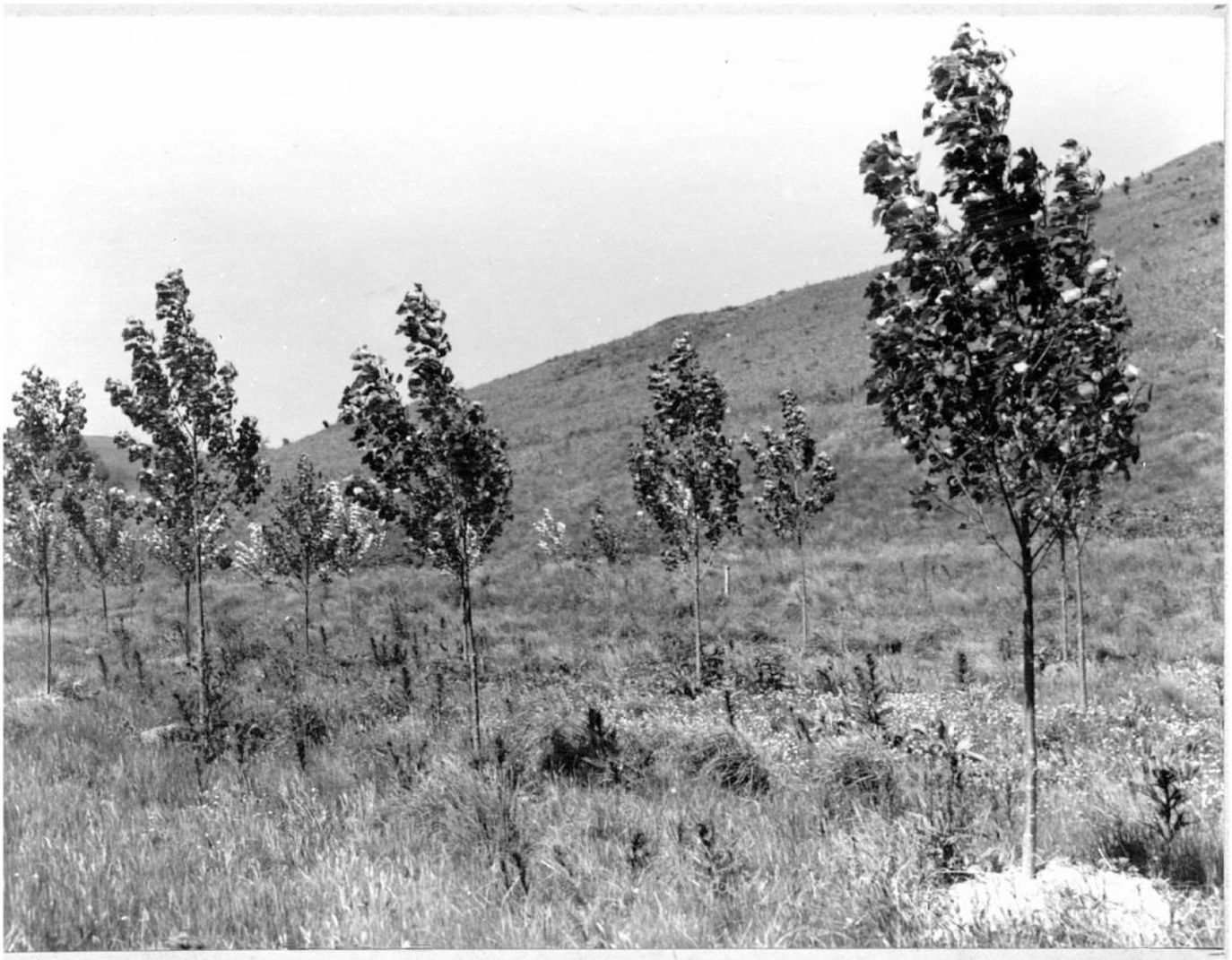
12.

Compt.	49
Species	E.L.
Age	P.25
Diam. B.H.	3"
Tree Ht. max.	18'
Tree Ht. av.	14'
Vol. (av.pole)	$\frac{3}{4}$ cu.ft.
Vol. per acre	600 cu.ft.
Remarks	The same type of larch as in No.11, before treatment

Forest History - Quantocks

13. Compt. 60 (Halswell)

Beech planted P.49 on hillside, almost maiden land.
Remarkably good growth for only 2 years planting.



Forest History - Quantocks

14. Compt. 58 (Halswell)

Poplar of various varieties, mounted planted on old water-meadow site, P.50. Research area.

Forest History - Quantocks

15. Compt. 56 (Halswell)

This area, consisting originally of Sweet Chestnut coppice, was felled in 1942. In addition to the resulting coppice (10 yrs. of age), is a sporadic distribution of maiden Birch Sycamore and Cherry.
The treatment has been to clean the area, leave the Sweet Chestnut as it is for a short rotation for fencing material, and to favour as even a distribution as possible of Maiden trees, thus creating High Forest with Coppice.

QUANTOCK FOREST

1

Compt	18	
Species	Thuya & S.S.	
Age	P.22 & P.25	
Diam. B.H	Thuya 9"	S.S. 12"
Tree Ht. Max.	Thuya 55'	S.S. 70'
Tree Ht. av	Thuya 50'	S.S. 60'
Vol. av. Pole	Thuya 7cu.ft.	S.S 15cu. ft.
Vol. per acre	Thuya 2660.cu. ft S.S. 1050 cu. ft	

Remarks: Mixture of S.S. and Thuya. Thuya is P.22 and was beaten up with S.S. in P.25. Eventually a pure S.S. crop is visualised. Butt-rot in Thuya is not much in evidence yet.

2

Compt	29
Species	N.S.
Age	P.22
Diam. B.H	6"
Tree Ht. Max.	45'
Tree Ht. av	40'
Vol. av. Pole	4 cu. ft.
Vol. per acre	2000 cu. ft

Remarks: N.S. P.22. Thinned 3 times and high pruned. Has produced a large revenue approx. 150 per acre up to date in telegraph poles, pitwood and xmas trees. Altitude 900 ft.

3

Compt	32	
Species	S.S.	
Age	P.24	
Diam. B.H	7"	7"
Tree Ht. Max.	65'	
Tree Ht. av	55'	
Vol. av. Pole	7 cu. ft.	
Vol. per acre	3150 cu. ft.	

Remarks: S.S. P.24 in Kennel Combe. High pruned 150 per acre (approx).

4

Compt	33
Species	F.R. Douglas
Age	P.24
Diam. B.H	5"
Tree Ht. Max.	40'
Tree Ht. av	35'
Vol. av. Pole	3 cu. ft.
Vol. per acre	1650 cu. ft.

Remarks: D.F. (Fraser River), p.24, showing the poor development of this variety

5

Compt	35
Species	S.S.
Age	P.22
Diam. B.H	14"
Tree Ht. Max.	70'
Tree Ht. av	65'
Vol. av. Pole	20 cu. ft.
Vol. per acre	5000 cu. ft.

Remarks: S.S. P.26, which was beaten up in a small D.F. P.22 area. This shows remarkable growth and was planted in a small strong Bracken area. Spiral cracks shown. The present Forest depicted.

6

Compt	35
Species	D.F.
Age	P.22
Diam. B.H	9"
Tree Ht. Max.	65'
Tree Ht. av	60'
Vol. av. Pole	9 cu. ft.
Vol. per acre	3150 cu. ft.

Remarks: D.F. P.22, which was originally planted at 7' x 7' in Cockercombe. High pruned 150 per acre.

7

Compt	35
Species	Ash and Sycamore
Age	P.26
Diam. B.H	5"
Tree Ht. Max.	40'
Tree Ht. av	35'
Vol. av. Pole	3 cu. ft.
Vol. per acre	1500 cu. ft.

Remarks: Small area of naturally regenerated Ash and Sycamore P.26 at entrance to Cockercombe.

8

Compt	37
Species	Beech
Age	P.00
Diam. B.H	8"
Tree Ht. Max.	60'
Tree Ht. av	50'
Vol. av. Pole	5 cu. ft.
Vol. per acre	1750 cu. ft.

Remarks: A small area of acquired beech in Cockercombe, showing the possibilities of this species. Age approx. 35.

9

Compt 43
Species Silver fir
Age P.27
Diam. B.H 8"
Tree Ht. Max. 60'
Tree Ht. av 54'
Vol. av. Pole 6 cu. ft.
Vol. per acre 2700 cu. ft.
Remarks: Abies grandis P.27. High pruned 150 per acre

10

Compt 45
Species J.L.
Age P.23
Diam. B.H 8"
Tree Ht. Max. 55'
Tree Ht. av 48'
Vol. av. Pole 6.5 cu. ft.
Vol. per acre 2405 cu. ft.
Remarks: J.L. P.23 Altitude 900 ft. and very exposed to the S.W.

11

Compt 48
Species E.L.
Age P.25
Diam. B.H 3 ½"
Tree Ht. Max. 20'
Tree Ht. av 15'
Vol. av. Pole 1 ½ cu. ft.
Vol. per acre 600 cu. ft.
Remarks: E.L. P.25. Altitude 1000 ft and very exposed. Very poor crop, planted on Calluna/Pteris area. Reconditioned in P.52 by planting large S.S. in appropriate groups. The better larch have been retained, leaving a modicum of inferior trees for overwood shelter.

12

Compt 49
Species E.L.
Age P.25
Diam. B.H 3"
Tree Ht. Max. 18'
Tree Ht. av 14'
Vol. av. Pole ¾ cu. ft.
Vol. per acre 600 cu. ft.
Remarks: The same type of larch as No. 1, before treatment

13

Compt **60 (Halswell)**
Beech planted P.49 on hillside, almost maiden land. Remarkably good growth for only 2 years planting.

14

Compt. **58 (Halswell)**
Poplar of various varieties, mounted planted on older water-meadow site, P.50. Research area.

15

Compt. **56 (Halswell)**
This area, consisting originally of Sweet Chestnut coppice, was felled in 1942. In addition to the resulting coppice (10 yrs of age), is a sporadic distribution of maiden Birch, Sycamore and Cherry.
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