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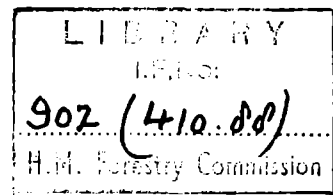
FRISTON

FOREST

SE(E) CONSERVANCY

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FORESTRY COMMISSION

HISTORY

of

FRISTON FOREST

1926 - 1951

SOUTH EAST (ENGLAND) CONSERVANCY

HISTORY OF FRISTON FOREST

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HISTORY OF FRISTON FOREST

NOTE BY THE CHAIRMAN (LORD ROBINSON) ON THE AFFORESTATION OF CHALK AREAS

In our afforestation of bare chalk downs and limestone areas we have been groping for some 25 years or so to find successful methods. This has gone on at a number of places, of which Friston and Buriton in Conservancy S.E. (E.) are the most important chalk areas. The oolite at Allerston is a good limestone example.

Gradually we have been getting to the bottom of the problem and now appear to be well in sight of reasonable solutions. In the course of the whole process a great deal of experimental work has been done (notably at Buriton and Friston) and some informative plantation work done in the ordinary course of conservancy operations.

I set out below the order of events as I recollect them:

Main species

It was agreed from the outset that the main crop species on chalk and limestone would have to be beech with sycamore perhaps as a subsidiary species and with ash in the damp places. Evidence in favour of sycamore was fragmentary.

Nurses.

It was tacitly assumed that beech at least required a nurse. To begin with European larch was used on a large scale but behaved very erratically on the chalk downs. Survival was unsatisfactory and initial growth very slow. European larch was therefore abandoned as soon as its poor value was fully realized but no consistent line was then followed or indeed apparent. A good deal of beech was planted without nurses using experimentally such devices as cultivation but efforts were also made to find a nurse to replace European larch. Natural growth such as elder (especially round old rabbit burrows) gorse and thorn (which began to invade downland when enclosed) were made use of when at hand. Broom was sown and for a time gave promise of results.

The first experimental work at Buriton pointed to grey alder as a suitable nurse for beech but the results were applied too quickly to downland on the mistaken assumption that the soil conditions were similar. In

the upshot grey alder proved a broken reed.

The next steps in my recollection were with pines as nurses. I found a small plantation (since burned) in the Isle of Wight where ursuline Corsican pine had reacted excellently on beech. Mr. Felton at Friston made a mixed Scots pine/beech plantation which showed great promise when I first saw it in 1941. Further experimental work at Buriton has confirmed the effectiveness of pines (Scots, Corsican and Austrian) as nurses.

Behaviour of Pines

It was at one time thought that Corsican pine was thoroughly at home on limestone and chalk. My faith in that idea was shaken on finding, in the early 30's, extensive deaths in Highmeadow (mountain limestone) and in Cirencester Forest Garden (oolite). Later it became apparent that normally Scots pine in pure crops begins to die off between the 20th and 30th years. (Isle of Wight and Allerston). Although Corsican pine dies too it seems to be more at home and anyway lives longer. There are examples at Allerston (large scale) and Buriton (experimental) where successful group planting of beech has been done in dying pine crops.

Vitality of beech

If beech can resist drought and spring frost for the first year or two after planting, they then exhibit remarkable powers of vitality and, ultimately, recovery. I have observed numerous sporadic examples, the most striking example being in King's Forest. There part of Queen Mary's Avenue (beech and birch) planted in 1938 on dry sandy soil overlying "dead" chalk started off well enough but was grazed unmercifully in the early war years by thousands of rabbits. The beech were reduced to (apparently) dead sticks a few inches long and about 1 in. diameter. I had a couple of small plots netted in 1943 and to our astonishment quite a high proportion of the beech came to life again and have since grown reasonably well.

This is an important characteristic of beech which I have only slowly come to appreciate. It has to be borne in mind when considering whether to plant beech and nurses together or to bring in the beech under nurses at a later stage. I have no doubt in my own mind that both should be planted at the same time.

Need for Patience

I have always insisted that patience is essential in establishing

hardwood crops and it appears that beech requires an even greater amount than oak. It seems to take longer to get the "forest conditions" which is a convenient term for the complex changes which have to be brought about before beech develops freely. I remarked on the occasion of my last inspection of Friston (summer of 1945) "It is worth noting perhaps that it has taken 18-19 years to reach this stage where alder and larch have been used as nurses and that it has not yet been reached in pure beech and pure ash crops below the "frost line" ", and added ".this is the first occasion on which I have felt any real pleasure in inspecting our Friston effort. I think that woods properly established and tended should develop well in the long run and that we now know how to handle the major problems." In saying that I had also in mind the use of pine nurses.

Collection of further Data

It is important that we collect and analyse all available evidence from mixed beech/pine plantations, viz. such data as the relative rates of growth and the effect of treatments designed to promote the growth of beech where threatened by the more rapid initial growth of pine. In this respect the history of Friston is defective but, as noted above, Friston is not the only forest which can supply information.

Possible use of Norway spruce as a nurse for Beech

It is curious that we have tended to overlook this point, although I have drawn attention to it in an article entitled "Some Ecological Aspects of Afforestation and Forestry in Great Britain" (Forestry, Volume XVI, 1942). The reference reads :-

"Norway Spruce in Mixture with Beech and Ash. Passing now to the other extreme of difficult sites, namely the open chalk downs, it can be stated that pure beech and pure ash plantations check almost as badly as do pure spruce on Calluna sites. Scots, Corsican, and Austrian pines, however, play the same part in bringing on beech on chalk as the pines do generally with spruces, etc. on heather. It seems probable, though difficult now to confirm, that many of the isolated clumps of beech on the Downs were raised in this way. Compartment 21, Gardiner Forest, is an example, and there are others in the same neighbourhood.

Unexpectedly, also, Norway spruce will serve the same purpose as pine on chalk. Plate VIIIb illustrates the results which can be obtained. Between the dark spruces right and left are a thin but vigorous ash (left) and vigorous beech (centre). The forest is Brighstone Down (Isle of Wight), Compartment 15, exposed directly to the south-west winds, soil very thin over the white chalk. The plantation was made in P.20 by a former proprietor and eaten back to ground level by rabbits. Properly protected since 1929, the broad-leaved trees have now attained in 12 years a height of 20 ft."

Present Practice of planting Beech/Pine Mixtures at Friston

Mr. Smith in his note on the history states that he has gone over to the 3-row/3-row mixture. I have some doubts about this. The beech should be adequately nursed but what will be the picture when the pine begin to die? If they all die the beech rows will be separated by a corresponding distance which would be four times the distance between rows (i.e. 18 ft.)

I think the risk of deaths from Fomes annosus on former agricultural land is greater than on virgin down land and beech itself is by no means immune from Fomes.

My own inclination would be to play more for safety and to plant a 2-row/2-row mixture.

"R"

23.2.51

Note on Friston by Mr. A.L. Felton

Unless some technique can be found to improve soil conditions before planting, rate of establishment, it is considered, must of necessity be slow.

In the earlier years matters were not helped by the type of beech used, many of these plants being of a poor type due to the impossibility of selection owing to shortage of the species. The vigorous grass growth has always been a problem, opinions varying as to whether, subject to the heads of the plants being freed in the late summer, the grass shelter was more beneficial than harmful. It is now considered that it is wiser not to let the grass mat round the plants.

With regard to the nurse trees, it is considered from the writer's experience generally on the chalk soils, that Scots pine is the better nurse unless there is a considerable depth of soil over the chalk. Where there is a good depth of soil Corsican pine or grey alder establish themselves reasonably quickly (P.27 at Friston with Corsican pine compared with P.31, or alder P.27 at Friston and at Buriton in low ground east of New Barn).

Cupressus macrocarpa is, it is thought, too hard to establish, to make further trial with this species economic. The use of broom at one time appeared promising, as the first trial was made on an area in Compartment 19 P.31 where there was reasonable surface soil, but on the later sowings on shallower soils, did not prove successful. The trials of Spanish broom in Compartment 15 P.29 (later taken over by the War Agricultural Committee) proved a complete failure mainly owing to snails.

From the experience gained over a number of years at Friston it is now considered that a better type of beech would be produced if a Scots pine or Corsican pine crop (according to depth of soil) were planted pure as an initial crop, with a view to bringing in the beech 15 to 20 years later under a light top shelter of the conifers.

Not only would this mitigate against frost and the smothering effect of grass, but would also protect the beech from the drying north-east wind so often experienced at Friston in the spring. This wind, it is considered, is as harmful to the leading shoot of the beech as frost, and the damage from which has undoubtedly often been attributed in the past to frost.

(sgd) A. L. FELTON

19-4-51

Comments by Lord Robinson on Mr. Felton's note

I have read Mr. Felton's note of 19/4/51.

The only additional points which I have to add to my note of 23/2/51 are :-

- (1) The suggestion to bring in beech under a 15-20 year preparatory crop of pine will lengthen the time required to produce large beech. In present circumstances it is urgent to get such beech as quickly as possible.

- (2) My recollection of Poverty Bottom is that there were one or two thriving groups of Cupressus macrocarpa in which the trees were remarkably straight and cylindrical. The species may not be of any great economic significance but it would be interesting to try experimentally to raise it in mixture with pine.

R.

26.4.51.

HISTORY OF FRISTON FOREST

INTRODUCTORY NOTE BY DISTRICT OFFICER

The Forest consists of about 2000 acres of chalk downland leased from the Eastbourne Waterworks Co. in two leases dated 17.11.1926 and 29.9.1927. Both leases expire in the year 2126. The land is a catchment area for the waterworks. There is no surface drainage and the rainfall is absorbed direct into the porous subsoil (chalk) from which it is drawn by means of wells connected by an underground tunnel to the pumping station.

Apart from the natural difficulties of afforesting this area further discouragement has been added by the loss of many acres of plantations on account of wartime conditions. The War Agricultural Committee in 1941-1943 took over most of the unplanted land and ploughed up a lot of the recently planted areas. Details of this are given in the tabular statement. The Committee, of course, are restricted in their farming methods on account of the pollution danger as this is a water supply catchment area and are now handing the land back to the Commissioners at the rate of 100-200 acres per annum.

The military authorities took over the land not occupied by the Agricultural Committee as well as the P.40 and P.41 areas which had to be written off.

Apart from the plantations actually destroyed considerable trouble was occasioned by the removal and destruction of fences which opened up the area to rabbits.

John White
District Officer
17.11.50

SILVICULTURE

Choice of Species

Afforestation of the area seems to have been a difficult problem from the very start. Although a considerable number of species were planted in trial plots in the first year 1927 (see Appendix III) it seems to have been agreed, though not specifically noted that the ultimate desirable species was beech. The chief difficulties were exposure, frost, shallow and dry soil, deficiency of humus, root competition from the turf and a general lack of "forest conditions". It is easy to realise now that under these conditions afforestation must of necessity have been a very slow and laborious process.

Nurse species

The necessity of shelter or nursing of the beech was soon appreciated and the silvicultural history of this forest is largely concerned with the search for a suitable nurse species since there was little existing growth which could carry out this function. In passing, reference may be made to Compartment 42 where P. 34 beech is becoming established among gorse despite enforced lack of attention in the war years.

(a) European larch

The first nurse to be tried was European larch which was used in P. 27, 28, 29, 30 and 31. At this time it was obvious in the earlier plantings (which included some bad frost hollows although this fact does not appear to have been appreciated at the time) that European larch was a complete failure as a nurse and grey alder was substituted for the purpose. A small area of this species had been planted in Compartment 9 (P. 27) and seemed suitable. (It is also thought that it had been successful as a nurse at Buriton). Although only a measure of success was achieved in Compartments 18, 19, its use was continued till about 1938 since when it has been abandoned.

(b) Broom

Attention was turned to broom and some encouraging results were obtained from sowings in the P. 32 area. The use of this

species was continued till 1938 but it is now agreed that it is too short lived and not tall enough to be an effective nurse.

(c) Pines

It is now realised that the most suitable nurse is a pine but this seems to have been appreciated only very slowly. A Corsican pine belt to form shelter was one of the earliest projects and has been successfully established along the whole of the southern boundary which faces the sea. Half this belt is of good strain of Corsican pine (Compartments 4, 5, 7, 8, 9 P.27) but the other half (Compartments 1, 2, 3, 4 P.31) consists of the ursuline "variety". While forming a good wind-break the latter is of very poor form and may be too heavily crowned to be an ideal nurse.

In the early stages the true Corsican section seems to have been characteristically slow in establishing itself and although further patches of the species (with beech) were planted in Compartments 13, 14, 12, 25 and 24 (P.28 and 29) this slowness earned its disfavour.

In the light of the present state of affairs Corsican pine seems to be preferable as a nurse as it is of better form and is thought to be longer lived than Scots pine. If it were possible to get over the difficulty of inadequate seed supply and to evolve a nursery and planting technique which would ensure quicker establishment it would seem to be as near the ideal nurse for this area as could be desired. Until such dreams are realised therefore Scots pine is to be accepted as the most practical nurse species.

There appears to have been some reluctance to recognise its qualities. Although many species were tried in the sample plots established in the first year, Scots pine seems to have been ruled out and first appears (in 1931) as a beat up in the P.28 and 29 patches of Corsican pine/beech mentioned above. Although its use was extended to beating up a great deal of

the frost hollow of Compartments 3, 4, 5, 6, 11, 12, 13, 14 the first record of it having been used as an initial nurse is in P.38. The greater part of this planting was beech with broom seed but two belts of mixed Scots pine/beech were planted. This idea seems to have been successful and similar belts were put in previous beech plantings (P.35, 36) in the following year. Unfortunately the P.35, 36 and 38 areas are among those which were reclaimed for agriculture during the war but remnants of the Scots pine/beech belts have survived in Compartments 16 and 17 where the nursing effect is very noticeable.

From 1940 the standard practice has been adopted of an alternate row mixture of Scots pine and beech, $4\frac{1}{2}$ ft. between all rows, Scots pine $4\frac{1}{2}$ ft. apart in the row and beech 3 ft. For the future, however, the single row mixture is to be modified to strips of 3 rows Scots pine alternating with 3 rows of beech.

Beech/pine mixtures

Although there are some promising plantations of early beech/pine mixtures (notably the P.29 patch on Middle Brow Compartment 25) where beech is beginning to "climb" through the pine it is by no means certain that the problem of establishing beech is solved. Attention has been drawn to a certain amount of die back of Scots pine in Compartment 24, P.29 Scots pine/Corsican pine/beech mixture and it may be that Scots pine may not be long lived enough to do its work properly. Another point which is a great source of controversy is the relative age at which the beech should be introduced. With the exception of the P.27 Corsican pine shelter belt which was underplanted with beech P.44 all the beech in the pine/beech areas has been planted at the same time as the pine.

While there seems general regret (on the whole) that the beech was introduced into this P.27 Corsican pine belt it has shown remarkable growth where the pine has been opened up accidentally by incendiary bombs and it may be that it will be preferable to get the pine well established before bringing in the beech.

Beech in mixture with other species

While it is now more or less taken for granted that Scots pine/beeceh is the order of the day other species have been tried and the only conspicuous success has been sycamore P.31 Compartment 9.

It seems possible that this is due to a localized area of good soil because sycamore of the same age and equally well sheltered in Compartment 8 is nothing like as good.

Ash

In the early years efforts were made to establish ash but it is now realised that there is little hope of success from this species.

Cupressus macrocarpa

Several plots of Cupressus macrocarpa were planted in 1927 and 1929 and efforts have been made to establish others since. Although regarded with disfavour in early years the tree is now well established and gives good shelter, perhaps too much to be a useful nurse in intimate mixture. It appears to be exceptionally difficult to establish however.

Methods of planting

In the early years planting was done with the Schlich or nursery spade but owing to the frequent occurrence of flints in the soil a method was devised in 1930 in which a fork was used and this has become the standard method. A specially heavy type of tool is used as the wear is severe.

Ploughing

Apart from the question of species selection planting technique has received attention. From the beginning a certain amount of soil cultivation before planting has been carried out. This has included full and single furrow ploughing, screefing and working up, or in some cases, pitting. Mention is made in the records of the use of a subsoiler in P.38. The R.L.R. plough was used over most of the P.47, 48, 49 area. The benefits of this are the breaking of the turf which reduces root competition in the first year or two; the breaking of any compacted layer of chalk or flint near the surface and general aeration and cultivation. Against this, however, is the serious disadvantage of drying out of the soil and this was very noticeable in the hot dry summers of 1947 and 1949 when deaths due to drought were considerable. In 1950 two new machines, the stump jump plough and the sub-

soiler were introduced. These obtain a like amount of cultivation etc., without the disadvantage of causing excessive drying out. The stump jump plough was used on grassland and the subsoiler on stubble.

Research. Note by Research Branch on the experimental work at Friston Forest

Introduction

Friston is one of the few forests where experimental work started within a year of the acquisition of the area and for that reason the results were of more immediate value to the field officers than in the majority of cases where, so often, most of the ground was planted up before any experiments were commenced.

Like Buriton, Friston is a chalk downland area and experimental work has been largely directed towards the establishment of beech.

The two places present very similar problems with the same adverse factors of weed growth, summer drought, frost, exposure, shallow soil etc., but at Friston, being within a mile of the sea, there is the added trouble of salt winds.

There were 28 experiments at Friston laid down between 1927 and 1939 but many were lost in World War II, either to emergency cultivation or to firing ranges.

Most of the early work was carried out in the main valley to the north of and below the Eastbourne road at elevations ranging from 80 ft. to 300 ft.

Two main ground types were concerned (1) The valley bottom where there is a reasonable depth of soil but rather a heavy grass-herb vegetation and a tendency to very severe frost damage. (2) The middle and upper slopes which face north and have a very shallow soil but are out of the worst frost levels. Both these sites are badly affected by salt winds during westerly gales.

Experimental Work

The first conservancy plantations showed the importance of (1) method of planting (2) the desirability of a suitable nurse species for beech and (3) the time and degree of weeding.

Most of the experiments were laid down with these points in mind and the following table groups them into five broad classes.

Subject Groups	Experiments and years of planting											Remarks
	1927	1928	1929	1930	1931	1933	1938	1939				
(1) Preparation of site and methods of planting	1			11	12		22	27				
	2						23					
(2) Weeding Experiments						15 to 21						
(3) Trial of Species	3	6					24	28				
	4											
(4) Use of Nurses	3	8	10				24					Also Brook Lane area
		9					25					
(5) Miscellaneous	5	6					26					
		7										
		9							13	28		
									14			

(1) Preparation of site and methods of planting

In the early experiments it was assumed that shallow single furrow ploughing would be the best method of combining sward suppression with a certain degree of soil cultivation and where possible it was adopted as a basic treatment.

On this single furrow ploughing different positions of planting were compared and it was found that planting in the furrows or on the side of the furrows gave almost identical results with deaths averaging approximately 6%, but planting on top of the furrows was not so good and gave about 18% deaths the failures being due to summer droughts.

Where ploughing was not adopted comparisons were made between notching direct into the natural surface, which resulted in failures of about 16%; screefing and notching which gave approximately 10% deaths and lastly screefing and then loosening the soil before notching in the plants which reduced the deaths to about 7%.

Really thorough pit planting, involving breaking up the soil two spits deep gave consistently good results (deaths approximately 5%) but the improvement did not justify the great increase in expense.

From these results it was apparent that both screefing and some degree of soil loosening was essential and by 1933 the standard planting method on ground unsuitable for ploughing was that evolved by forester T. Aston who was in charge of this area for many years. This method consists of screefing patches and then using a strong fork to heave up and loosen the soil before inserting the plant. Much of the Friston soil is very flinty and a strong fork was found much better than a spade on such ground.

From 1947 onwards ploughing or ploughing plus sub-soiling was carried out wherever possible and modern equipment enabled this method to be used over a much wider range of ground types than was possible in the early years.

(2) Weeding experiments

Local experience suggested that serious sun-scorch and heavier deaths were frequently caused by the removal of shelter in early summer weeding.

Most of the experiments were comparisons of "normal weeding" against "no weeding" in fairly dense grass-herb vegetation, and the general result was that weeding increased the losses in the first season by from 3% to 12%

and decreased the height growth by from 1 in. to 3 in.

In large scale conservancy planting it was found, however, that if no weeding was carried out losses occurred during the winter following the first year's growth wherever the vegetation was rather lush especially if there was any snow. This was due to the small plants being buried beneath partly dead, wet vegetation.

The results of these weeding experiments together with those of large scale conservancy work showed that beech should be weeded where the vegetation is sufficiently dense, not in early summer, as is generally done, but later in the year about the second half of August.

If left too long, however, there is danger in suddenly exposing Lammas shoots to extremes of temperature such as may be expected in late summer and autumn.

(3) Species trials

The following species have been used in the Friston experiments :-

Scots pine	Beech
<u>Pinus radiata</u>	Ash
X European larch	Sycamore
X Japanese larch	X Birch
Norway spruce	X <u>Alnus incana</u>
X Sitka spruce	X <u>Alnus oregona</u>
X Lawson's cypress	<u>Sorbus intermedia</u>
<u>Cupressus macrocarpa</u>	XX <u>Eucalyptus gunnii</u>
X <u>Cupressus nootkatensis</u>	<u>Thuja plicata</u>
XX <u>Abies concolor</u>	XX <u>Eucalyptus whittinghamensis</u>

From this list the species with a double asterisk can be considered complete failures. Those with a single asterisk, while not complete failures, are not suitable to the conditions in this forest except where small areas of better soil and less exposure may be found.

Scots pine takes well and is not subject to any prolonged initial check. It reaches canopy quickly and its only disadvantage is that where the soil is thin it may not reach any great size before dying out.

Pinus radiata grew vigorously reaching 20 ft. in 20 years even on a very shallow soil but they suffered a lot from Evetria damage and are of

poor form. It is a species worth further trial on downland near the sea on sites not subject to severe frosts.

Both European and Japanese larches are very poor at Friston and have suffered severely owing to the salt winds which are much worse here than at Buriton which is further inland.

A few better larches do occur on the northern aspects or in places sheltered by hill shoulders from the worst sea gales but in general larch is a bad risk in this forest.

It is interesting to note that on the shallower soils here larch checks for many years and has heavy initial losses but ultimately the survivors seem to reach a critical point after which far better growth is made.

In the early years the lower branches become very dense owing to repeated cutting back of shoots by frosting and salt winds.

This causes a dense and unusually bushy growth which is a good sward suppressor, and it may well be that the critical point, when vigorous growth starts, is reached when the area of reduced vegetation competition is sufficient for the tree to build up a really vigorous root system.

Turning to the spruces, Norway has grown much better than has Sitka which is right out of its range here. In mixture with pine Norway spruce might do reasonably well even on the thin soils; on the deeper soils it might even be a possible nurse for beech.

Lawson's cypress, Cupressus nootkatensis and Abies concolor are all too slow to be of value either as nurses or as pure crops.

Cupressus macrocarpa, apart from the usual difficulty in transplanting, has been very promising and has attained an average height of over twenty feet in twenty years with dominant trees averaging about twenty-five feet.

It is definitely worth further trial.

Thuja plicata has grown well, and although we do not yet know to what size it may safely be grown on these shallow soils, it seems probable that it will be a useful species especially as even in small poles it is very saleable.

Turning to the hardwoods, beech is, of course, the major species but repeated experience has shown that over most of Friston forest a nurse crop is essential if a very prolonged period of check is to be avoided.

Neither Alnus oregona nor Alnus incana has given good results except

on deeper soils such as at Brook Lane or on the sites of old rabbit warrens.

Ash has only been successful on small areas of deeper soil and on the sites of old rabbit warrens where top soil and sub-soil have been inter-mixed to a considerable depth.

In the large valley bottoms, although the soil may be of fair depth, repeated frosting holds ash in check for 20 years or more. It is possible that an advance pine nurse crop might get it away in these low areas but this has not been tried experimentally.

In the experiments, sycamore has given rather puzzling and uneven results, but certainly deserves further trial. At the top of Compartment 9, where there is a reasonably deep sandy loam over the chalk, and where there is a good deal of water run-off from the slopes below the Eastbourne road, it has reached a top height of 36 ft. in 18 years and is still very vigorous.

It has also made good growth on the sites of old rabbit warrens or haystacks and on the sides of some old marl pits.

On the shallow soil sites it has generally given poor results. The good growth on the old haystack sites suggests that it may be a species that responds well to extra nitrogen; otherwise it seems to require a reasonably deep soil and, in this rather dry area, shows decided benefit from extra water.

As at Buriton birch has given very irregular results and is too uncertain to be recommended. Like so many other species it has done very well on the site of old rabbit warrens.

Sorbus intermedia has grown really well even on the very shallow soils. It is, however, a light crowned species and is very slow to suppress ground vegetation, therefore failing as a contemporary nurse.

Its berries attract birds, and scrub growth of other berried shrubs is likely to develop in plots of this species.

Eucalyptus species failed completely.

(4) Use of Nurse Species

In general the advantages of nurse crops for beech, and other fairly exacting species, have been more marked at Friston than at Buriton. It seems likely that this is because Friston is much more affected by salt winds than is Buriton and reports have been made repeatedly that foliage

of many species has been severely damaged by gales blowing in from the sea.

Scots pine has undoubtedly been the best nurse species tried in the experiments but it should be stressed that neither Corsican pine nor Austrian pine were used in the research work here.

In the conservancy plantation Corsican pine has given good results as a nurse but it is certainly slower in the first few years than Scots.

As at Buriton, European larch and Japanese larch, alders and birch are all too unreliable on the shallow soils to be used for large scale work.

Cupressus macrocarpa and Thuja plicata are both worth trial as nurses judging from their performance in the species trials.

Both gorse and broom have given very good results but it should be mentioned that many broom sowings have failed at Friston due to heavy losses of young seedlings in the cotyledon stage, from slugs and snails.

An interesting example of nursing can be seen at Brook Lane where a partly failed broom area was planted with grey alder in the following year (1930). In 1932 beech was introduced into this broom-alder mixture and grew exceptionally well with hardly any check period after planting. It should be noted, however, that the soil here is much deeper than average for Friston. Nevertheless, adjoining beech in the open, without nurses, were only half as high after ten years or so.

Experiments using various species as nurses for ash have shown that response is only obtained when canopy is nearly formed and this suggests that advance planting of the nurse species would probably be best. Both larch and alder gave good results with ash on the sites of old rabbit warrens but not on the shallow soils.

Lupin sowings failed completely at Friston.

5. Miscellaneous

(A) Treatment of Checked Beech Plants

Under this heading we have a most interesting experiment testing the effect of clearing the competing vegetation from around beech planted in 1927, and in check until the experiment commenced in 1931.

The vegetation was lush grass-herb in the main valley bottom.

The table below shows the very marked results of this treatment:

	<u>Control</u>		<u>Screefed ground</u>	
	<u>Beech</u>		<u>Beech</u>	
	<u>Mean Height</u> (inches)	<u>Mean Shoot</u> (inches)	<u>Mean Height</u> (inches)	<u>Mean Shoot</u> (inches)
February 1931	8.9	-	8.8	-
October 1931	11.1	2.2	13.2	4.4
October 1932	12.4	1.3	24.9	11.7
October 1933	16.4	4.0	43.4	18.5
November 1937	39.1	6.0	74.2	10.5

Hoeing was then discontinued and owing to the war no further results were obtained, but the results show in a striking manner the deleterious effect of dense competing vegetation.

(B) Shelter Belts

In Experiment 7 1928 an experimental shelter belt was made along the upper margins of Compartments 5 and 7 adjoining the main Eastbourne road by a direct sowing of Spanish broom (Spartium junceum) on a ploughed strip six feet wide and two thousand yards long.

The seed germinated well, but the young plants were cut back each year by both autumn and spring frosts, and a number of blank patches were caused.

Despite these early setbacks the broom grew steadily and after 10 years formed a fairly good belt with an average height of about 5 ft. and in the better patches up to 8 ft.

It has persisted extremely well and is mainly still vigorous after 23 years, averaging about 8 ft. high with occasional bushes attaining 11 ft.

Considering the extremely exposed position, subject to winds straight off the sea, this Spanish broom has done extremely well, but it is not a dense shrub and to afford really good protection the belt would need to be wider - say 10 - 12 ft.

Compared with common broom the Spanish species is slower in suppressing the surface vegetation but, on the other hand, it is longer lived.

(C) Direct Sowing

Apart from sowings of broom as a nurse crop there was only one direct sowing experiment at Friston; Cupressus macrocarpa being sown in strips with and without a simultaneous broom sowing. Germination was fairly good but slugs, snails, drought and frost lift caused an almost complete failure leaving only a few scattered cypresses to grow on. These few survivors grew well but the hazards were considered too great to risk further sowings.

(D) Age and type of Plants used

A trial of 1 year and 2 year seedlings of Cupresses macrocarpa as against 24 in. transplants gave very definite results, failures being as follows:-

1 + 0's 90%; 2 + 0's 70%; transplants 17%.

A small trial of large (3 ft. - 4 ft.) transplants of beech and European larch gave very poor results (deaths 30% for beech, 22% for European larch and many dead tops in both species) but there was no control of normal sized plants put in at the same time.

It should perhaps be mentioned here that conservancy records showed that beech transplants were decidedly more reliable than seedlings but that strong well rooted seedlings do sometimes give very good results.

(E) Spacing

There has only been one research spacing experiment in this forest and that concerns Cupressus macrocarpa at the following planting distances - 4 ft. x 4 ft. $4\frac{1}{2}$ ft. x $4\frac{1}{2}$ ft. and 5 ft. x 5 ft. It seems strange that a wider range of spacings was not used in this experiment.

While there are no replications and the results are thus suspect, the mean heights after twenty years are of some interest as it is unusual to find height differences which may be attributable to spacing.

4 ft. x 4 ft.	mean height	17.1 ft.
$4\frac{1}{2}$ ft. x $4\frac{1}{2}$ ft.	" "	21.0 ft.
5 ft. x 5 ft.	" "	23.4 ft.

There is a noticeable difference in the weight of branching in the 5 ft. x 5 ft. unit compared with that in the 4 ft. x 4 ft.

Summary

(1) Preparation of site and methods of planting

Much of this downland can now be ploughed but in places where ploughing is not practicable the planting method must include a generous sized screef and well disturbed soil patch such as is obtained by fork planting. If planting is carried out on shallow single furrow ploughing the furrow top must be avoided as a planting position.

(2) Weeding

Normal early summer weeding is not desirable with beech in this forest but a late summer weeding is necessary wherever the vegetation is lush.

In gorse only sufficient weeding should be done to keep the head of the plant from damage.

(3) Species trials

Scots pine gave very good results. Neither Corsican nor Austrian pines were used in the experiments but judging from results at Buriton and conservancy work at Friston both would be successful.

European larch, Japanese larch, ash, alders and sycamore have all given poor results on the shallower soils but are possible species where patches of deeper soil occur.

Cupressus macrocarpa and Thuja plicata are both worth further trial on a small scale.

Beech is, of course, the climax species on the Downs and probably has no substitute but experience at Friston is even more definite than at Buriton in showing that there is no point in attempting to grow it as a pure crop in the early stages.

(4) Use of nurses

There is no doubt that pines are the best nurse species tried so far at Friston. Scots pine was the only one used in the experiments but it may be taken that Austrian and Corsican pines would also be successful.

European larch is only successful on deeper soil and away from salt winds.

No broad leaved species has been fully successful as a nurse.

As stated in the Buriton report such species as broom and gorse make good initial nurses but have the disadvantage that an almost full crop of beech must be planted and there are no intermediate yields.

(5) Miscellaneous

(A) Treatment of Checked Plants

Removing the competition of surface vegetation from checked beech plants gave highly beneficial results.

(B) Shelter Belts

A Spanish broom shelter belt along a high ridge directly exposed to salt winds grew slowly but surprisingly well and has persisted for over 20 years. On the general question of shelter Friston forest, being practically on the coastline, shows more striking results than are found at Buriton.

(C) Direct Sowings

Generally direct sowings are too risky on chalk downland to be worth while.

(D) Age and Type of Plants Used

With both conifers and hardwoods transplants have given more consistently good results than have seedlings but it should be noted that sturdy beech seedlings have on occasions given excellent results.

M. Nimmo

Feb/52.

Conservator's Comments

In 1933 pines on the higher ground (e.g. Compartment 25) were condemned, but even at that date it was suggested that their ultimate use might be as a nurse. This has since proved to be the case. The nursing effect, where the pines are 15 ft. to 18 ft. is much more noticeable than where they are planted concurrently with the beech. While we still lack conclusive evidence on a considerable scale to support the view, I have contended for several years that we should get our nurse crop very well established in advance of attempting to plant the beech. The necessity for attaining the prescribed planting programme each year in the past has mitigated against this. To bring it about would mean very extensive fencing for an incomplete crop in the beginning.

The most unfortunate, but significant, point which strikes one in these plantations is the extremely bad type of the beech at Friston. I am convinced that many of our bad beech areas are due to the indiscriminate collection of seed in the past. Greater care is being taken in present day collecting and seed is only being obtained from good type parents. Nevertheless, even in the worst areas, there is a proportion of good type trees and it is my endeavour to spot and look after the small percentage of such trees which, in the main, are not spaced in such a way as to preclude a reasonable final crop.

Deep ploughing has not proved very successful, possibly because planting was carried out in a layer which contained little more than pure chalk or flints. The deep ploughing completely buried the turned up soil and the surface layers were very thin. Furthermore deep furrows are causing difficulties in working and will probably be a cause of embarrassment for future management, notably at time of thinning although of course there may be some levelling down before that stage is reached.

It has been found desirable, in consequence, to change the method of cultivation, to one of breaking the surface with a stump jump plough coupled with subsoiling. Lack of aeration will thus be overcome and the somewhat dense mat of surface vegetation it is thought will serve as a useful mulch, but not as a serious competitor for the limited nutrients available. Furthermore the thin layer of surface soil will remain near the surface and permit development of surface feeding roots in well aerated layers.

Individual line mixtures are too intimate and it has proved to be the case in nearly all, if not all, approved mixtures of species. There is little or no effect of shelter by pine nurses in the very early years and thus it has been found desirable to change over to three rows of each. Ultimately this will give better choice and easier control in cleanings and thinnings.

We are now in the process of taking back the land handed over to the Ministry of Agriculture and it comes to us after reaping a corn harvest and therefore in a fairly clean condition for planting, all that is considered necessary being subsoiling.

R. H. Smith.

1.1.51.

History of Friston Forest

APPENDIX I

Notes and Extracts (given in inverted commas) from Inspection Reports

12.12.1930. Assistant Commissioner (E. & W.) (Mr. H. A. Pritchard)

Divisional Officer's Notes. Roadside belt of Corsican pine (P.27) on the south boundary of the forest to be extended westwards. Sycamore to be planted at east end of this belt (Compartment 9). On account of poor results it was suggested that planting should be stopped so that existing plantations could be made good.

18.1.1931. Technical Commissioner (Mr. R. L. Robinson)

District Officer's Notes. European larch noted to be of doubtful use as a nurse and not to be used after F.Y.31 for beating up. Ash suggested for beating up in Compartments 4, 5, 6, 7, 13, 15. In the experimental plot (? P.27 Compartments 5 and 6) grey alder has done well, birch very badly. "... Alder may be used on a large scale if proved effective... Scots pine should be given up altogether. It was noted that Corsican pine in general has grown quite well." Beneficial effect of scrub in sheltering beech noted. The policy of light weeding with the object of sheltering was approved.

29.1.1931. Technical Commissioner (Mr. R.L. Robinson).
(meeting Assistant Commissioner (E. & W.) (Mr. H. A. Pritchard)
in
London) Divisional Officer's Notes

Planting programme not to exceed 20 acres per annum. Suggestions for nurse species:- grey alder or Corsican pine (ursuline) planted in advance, also simultaneous planting of beech/European larch and beech/grey alder mixtures; also Spanish and common broom by sowing; also existing grass by mowing and raking into lines at right angles to prevailing wind. All planting to be in carefully prepared pits. The following species to be used for beating up trials:- grey alder, European larch, beech, ash.

1.7.1931. Technical Commissioner (Sir Roy Robinson).

District Officer's Notes. A general assessment of progress of the various species tried. Only local successes noted. "The pine on the

hill top (Compartment 24 P.29) was not well spoken of, especially the Scots. The plants seen were mostly alive but slow." The complementary relationship of weeding and shelter was emphasised. "So far as weeds provide shelter without smothering they should not be cut away; but much more can be left during the summer over beech, sycamore and Cupressus macrocarpa than over larch and pine, and much more should be left during droughts than in continuous dull and rainy weather when moreover their growth is very rapid."

15.1.1933. Chairman (Sir Roy Robinson)
Assistant Commissioner (E.& W.) (Mr. W. L. Taylor)

District Officer's Notes. Intention noted to use large ash for ultimate beating up in the bottom and lower slopes (presumably Compartments 1 - 16). Cupressus macrocarpa not to be continued with... "the trees are not wind firm." Natural gorse has proved a better nurse than European larch which "it was a mistake ever to plant". "...Sycamore (is) not the tree for Friston, beech should be the crop".

"...Pines will never do any good on this situation (Compartment 25 P.29 Corsican pine/Scots pine/beech) ... probably the best treatment (will) be to use the pine as a nurse for beech eventually."

Use of Scots pine for beating up Compartments 13, 15 P.28 not approved. ("In the light of subsequent events the Divisional Officer considers this decision should have been amended.")

Chairman's Observations. Importance of foregrowth stressed and scarcity noted. Difficulty of finding a suitable nurse; general lack of success with species tried (larch, pine, grey alder, elder etc.). Decision to make further trials with the most promising viz: brooms, gorse, and grey alder.

8.2.1934. Assistant Commissioner (E.& W.) (Mr. W. L. Taylor)

District Officer's Notes. Various notes on success and failure of different species. Considered that nurses were unnecessary for beech. Agreed that shelter was an advantage but that probably the extra expense of providing this was not justified by results.

29.6.1937. Chairman (Sir Roy Robinson)

District Officer's Notes. General assessment of plantations.

Success with broom sowing in Compartments 18, 19 P.31-2 noted. Shelter value of existing scrub stressed but also noted that a certain amount of grass weeding is necessary to prevent suppression.

Divisional Officer's Observations. Noted a ruling that it was not economic to prune sycamore at this stage. Discussion on advance establishment of grey alder and broom and delayed introduction of beech.

Chairman's Observations. Various adverse factors noted, such as, excessive grass growth, frost hollows, exposed ridges and emphasis laid on necessity of taking advantage of, or introducing, any ameliorating factors such as topographical shelter, foregrowth of bushes, soil disturbance etc. As regards nurses ... "the general experience has been that beech has grown better than the nurses put in with it." Most success so far has been with broom and its extensive use for P.38 is prescribed as an experiment. Alternate rows with beech on ploughed ground suggested. Success of sycamore P.31 Compartment 9 noted and also sporadic recovery of European larch. Policy of autumn weeding of beech approved. Beating up to be done after careful assessment of the necessity. The second acquisition (Compartments 39-61) appears to be better sheltered and has some existing cover (gorse). Bigger planting programme proposed.

3.11.1938. County and Local Council Officers.

Divisional Officer's Notes

Object was to discuss preservation of views. Proposals were:-

1. Two vistas to be left through P.27, 31 roadside belt on the south boundary of the forest.
2. No planting on Friston Dencher (Compartments 31-35 = 149 $\frac{1}{2}$ acres).
3. No more planting at Snaphill (78 acres).

Recommended agreement to 1, limited agreement to 2 (65 acres of higher ground only), no agreement to 3.

28.6.1939. Assistant Commissioner (E. & W.) (Mr. O. J. Sangar).

District Officer's Notes. Development of various plantations noted. P.32 beech/grey alder/broom in Compartments 18, 19 - broom has died, grey alder require heavy thinning.

1.7.1940. Commissioner (Sir J. Sutherland)
Assistant Commissioner (E. & W.) (Mr. A.P. Long)

A/Divisional Officer's Comments. "It was considered that beech once established is undoubtedly the right tree for Friston. The evidence is strongly in favour of using Scots pine as a soil improver and nurse. The exact way of introducing the beech or of admixture if planted at the same time is not yet clear. It is thought that deep ploughing and planting on top of the furrow may enable beech to be successfully planted at the same time as the pine."

Assistant Commissioner's Comments. "Clearly the soil here is consolidated and aeration will greatly improve results ..." "Corsican pine is worthy of continued trial"

"... I am convinced that to get beech here we must first get a crop of pine ..." Success at Thetford under similar conditions was achieved in this way.

28.4.1941. Assistant Commissioner (E. & W.) (Mr. A. P. Long)
Representatives of the Ministry of Agriculture.

A/Divisional Officer's Notes. Compartments 30, 32, 28, 17, 20 21, 22 to be handed over to the War Agricultural Committee for ploughing up for food production. Shelter belts to be reserved. Beneficial effect of shelter from natural scrub on beech and ash in Compartments 5-7 noted. Pruning of beech in Compartments 3-7 to be discontinued.

11.5.1941. Chairman (Sir Roy Robinson)
Commissioner (Sir G. Courthope).

A/Divisional Officer's Notes. Handover to War Agricultural Executive Committee as above agreed, also Compartment 43. "There is now clear evidence in the forest that beech, unless adequately nursed by an evergreen, is having a very great struggle first to start growing, and then to form canopy, but the evidence of the pine/beech belts shows very clearly that beech can be raised under the most unfavourable soil and climate conditions with pine nurses. It was thought that a 50/50 mixture of about 1000 beech and Scots pine per acre would be best."

"Beech can be introduced experimentally into older pine plantations both by planting beech in natural gaps and by the removal of occasional pines. In either case really strong beech should be pit planted."

"The general conclusion arrived at was that beech can be grown on the whole at Friston ... It is an expensive process and Sir George Courthope thought that on economic grounds the afforestation of downlands was inadvisable. The Chairman agreed ... but that owing to the increased demand for beech timber, particularly in war time, the formation of beech forest was a national necessity ... we must ensure that nothing is ploughed up that we may need as future evidence."

Chairman's Comments. "I agree ... after much investigation we come back to the Scots pine/beech mixture which was, I suspect the way in which most of the beech clumps on high points on the Downs were raised. The lessons learned at Friston should be applied elsewhere."

31.3.1945. Chairman (Sir Roy Robinson)

A/District Officer's Notes. The introduction of P.44 beech into the P.27 Corsican pine roadside belt was criticised. Comparing this area, where the beech were put in 18 years after the pine with P.29 Corsican pine/Scots pine/beech in Compartment 12 where the beech and pine were put in together it was decided that the latter (i.e. contemporaneous planting) was almost certainly the best method. Deaths of some Scots pine in Compartment 24., P.29 were noted. In Compartment 18 P.31-2 the broom has died out and the beech though well established are of very bad form indeed.

A/Divisional Officer's Notes. "Some Norway spruce/beech mixture to be tried on low lying ground as where there is sufficient moisture Norway spruce may prove a more manageable nurse than pine. For the most part Scots pine/beech alternate row mixture should be the rule for future planting. Corsican pine is likely to be too scarce for some years to come to use purely as a nurse and its advantages are not sufficiently proved to outweigh the disadvantages of heavier initial failures and slower establishment." "It is not considered that we had enough evidence to show that soil preparation of any kind would be sufficiently beneficial to justify large scale work for future plantings."

15.9.1945. Duke of Devonshire
Chairman (Sir Roy Robinson)

A/Divisional Officer's Notes. Attention must be given to thinnings in P.27 Corsican pine, Compartments 5, 7, 8; P.28 Corsican pine/ Scots pine/beechn, Compartments 13, 14; P.29 Corsican pine/ Scots pine/beechn Compartment 25. Sycamore/European larch in Compartments 7-9 P.27 will be a difficult crop to handle.

Chairman's Comments

"... We are ... beginning to witness the establishment of "forest conditions" and the effect on growth. It is worth noting, perhaps, that it has taken 18-19 years to reach this stage where alder and larch have been used as nurses and that it has not yet been reached in pure beech and pure ash crops below the "frost-line." Clearly in dealing with land of this or a similar type our efforts must be directed to getting "forest conditions" in the shortest possible time ... An interesting detail was the development of Cupressus macrocarpa after a slow beginning."

26.2.1948. Director (E) (Mr. O. J. Sangar)

District Officer's Notes. Thinning of roadside belt (Compartments 4, 5, etc. Corsican pine P.27 beech P.44) should be at 2-3 yr. intervals and done with the object of keeping the trees windfirm and this procedure will also allow some light to the beech to allow it to develop. European larch on the slopes below this belt and also elsewhere noted as now well established and with no evidence of die-back. Trials to be made with oak, Lawson's cypress, Norway maple, Norway spruce, etc. on failed area in frost hollow (Compartment 6).

Conservator's Comments. "At one time the idea got about that the Chairman had given instructions for this belt (Compartments 4, 5 etc. see above) to be heavily thinned with a view to bringing in the beech at once. I took the matter up with the Chairman and he was in agreement with me that it was a pity to spoil^a Corsican pine stand merely to bring in beech at this date".

John White
District Officer.

29.1.51.

History of Friston Forest

APPENDIX II

Supervision 1927 - 1950

Divisional Officers (Conservators)

Mr. A. L. Felton	1927 - 1939
Mr. F. C. Best	1939 - 1946
Mr. A. L. Felton	1946 - 1949
Mr. R. H. Smith	1949 - to date

District Officers

Mr. Mackie-Whyte	
Mr. R. E. Fossey	
Mr. R. G. Sansen-Baker	
Mr. W. A. Muir	- 1939
Mr. Adams	1939 - 1940
Mr. T. Peace	1941 - 1946
Mr. J. F. Goodwin	1946 - 1947
Mr. J. White	1947 - to date

Foresters

Mr. J. Tellfer	1927 - 1928
Mr. T. Aston	1928 - 1943
Mr. G. Holter	1943 - to date

History of Friston Forest

APPENDIX III

Planting Statement

P. Year	Area (acres)	Compartment Numbers	Species planted	Remarks
1927	14.8	4,5,6,7,8,9, 10.	Beech/European larch mixture. Beech/grey alder mixture. Sycamore/European larch mixture Pure Corsican pine in shelter belt. Sample plots of Norway spruce, Sitka spruce, <u>Cupressus macrocarpa</u> , <u>Pinus insignis</u> , Lawson's cypress, <u>Abies concolor</u> <u>Cupressus nookatensis</u> , etc. Nursing experiment of beech, ash, sycamore, as main species with various mixtures of Japanese larch, European larch and grey alder as nurses.	The pure Corsican pine shelter belt underplanted with beech in 1943 and 1944.
1928	14.8	11,12,13,14, 15.	Beech/European larch mixture. Beech/Corsican pine mixture.	110 acres taken over and ploughed by War Agricultural Committee in 1942-43 of which 10 acres were returned and planted with a mixture of beech and Scots pine in 1946. The remaining 100 acres yet to be returned.
1929	8 $\frac{1}{2}$	24,25,27.	Beech/European larch mixture Beech/Corsican pine mixture <u>Cupressus macrocarpa</u> .	6 acres taken for agriculture in 1942-43. Returned and replanted in 1946. The beech/Corsican pine was later beaten up with Scots pine.
1930	7 $\frac{1}{2}$	26,27,28	Beech/European larch mixture Corsican pine/beechn mixture.	36 acres taken for agriculture in 1942-43 and returned and replanted in 1946. The Corsican pine/beechn later beaten up with Scots pine.
1931	80	1,2,3,4, 18,19.	Corsican pine shelter belt continued. Turned out to be "ursuline". Beech/European larch mixture. Partial planting of beech for later introduction of grey alder and partial planting of grey alder for later mixing with beech.	22 acres taken for agriculture in 1942-43 and returned and replanted in 1945.
1932	34	18,19, 1,2, 3,4.	Beech and grey alder advance planted last year each filled up with the other species, resulting in a mixture of grey alder and beech. Broom seed was also sown among the beech and grey alder.	As a result of agricultural ploughing and removal of fences this plantation was so badly rabbitied that it is now hardly worth retention as a crop but will be valuable for providing shelter for a replant.
1933-39	466	17,20,21,22, 23,28,29,30, 32,36,37,38, 42,43 & 44.	Beech/grey alder/broom mixture. Scots pine/beechn mixture.	All plantings in these P. years were taken over for agriculture in 1941-42 & 1942-43 with the exception of 34 acres of P.34-38 in Compartments 42,43 & 44. 10 acres in Compartment 43 were returned and replanted in 1943; 27 acres in Compartments 42 & 43 - in 1946. 28 acres in Compartment 44 to be planted in P.51.

P. Year	Area (acres)	Compartment Numbers	Species planted	Remarks
1940	100	45,53,54,65	Beech/Scots pine mixture	Used as a military training area from about 1942 and destroyed. Replanted in 1947, 1948 and 1949.
1941	44	46, 47	Beech/Scots pine mixtures	Destroyed by military use about 1942. 31 acres replanted in 1948. 13 acres to be planted in 1951.
1942	16			Replant of a burned area
1943	10	43	Beech with various nurses	All for Research Branch
1944	Nil			Corsican pine shelter belt in Compartments 4,5,7,8 & 9 underplanted with beech.
1945	22	2,3,4.	Scots pine/beechn mixtures	Formerly P.31
1946	77	11,12,25,26, 27,42,43.	Scots pine/beechn. Small areas of Norway maple, sycamore, sycamore/Scots pine, Norway maple/Scots pine, Norway maple/beechn/Scots pine.	Formerly P.28,29,34, 34-38
1947-48-49	365	45,46,49,50, 51,52, 53,54, 55,56,57,58, 59,60.	Scots pine/beechn mixture	Single row mixture mainly on R.L.R. ploughing. Includes all former P.40 and 31 acres of former P.41.
1950	132	39,40,41, 16B	Scots pine/beechn mixtures Scots pine Beechn	Compartment 16B stump-jump ploughed. Compartments 39, 40 & 41 subsoiled.

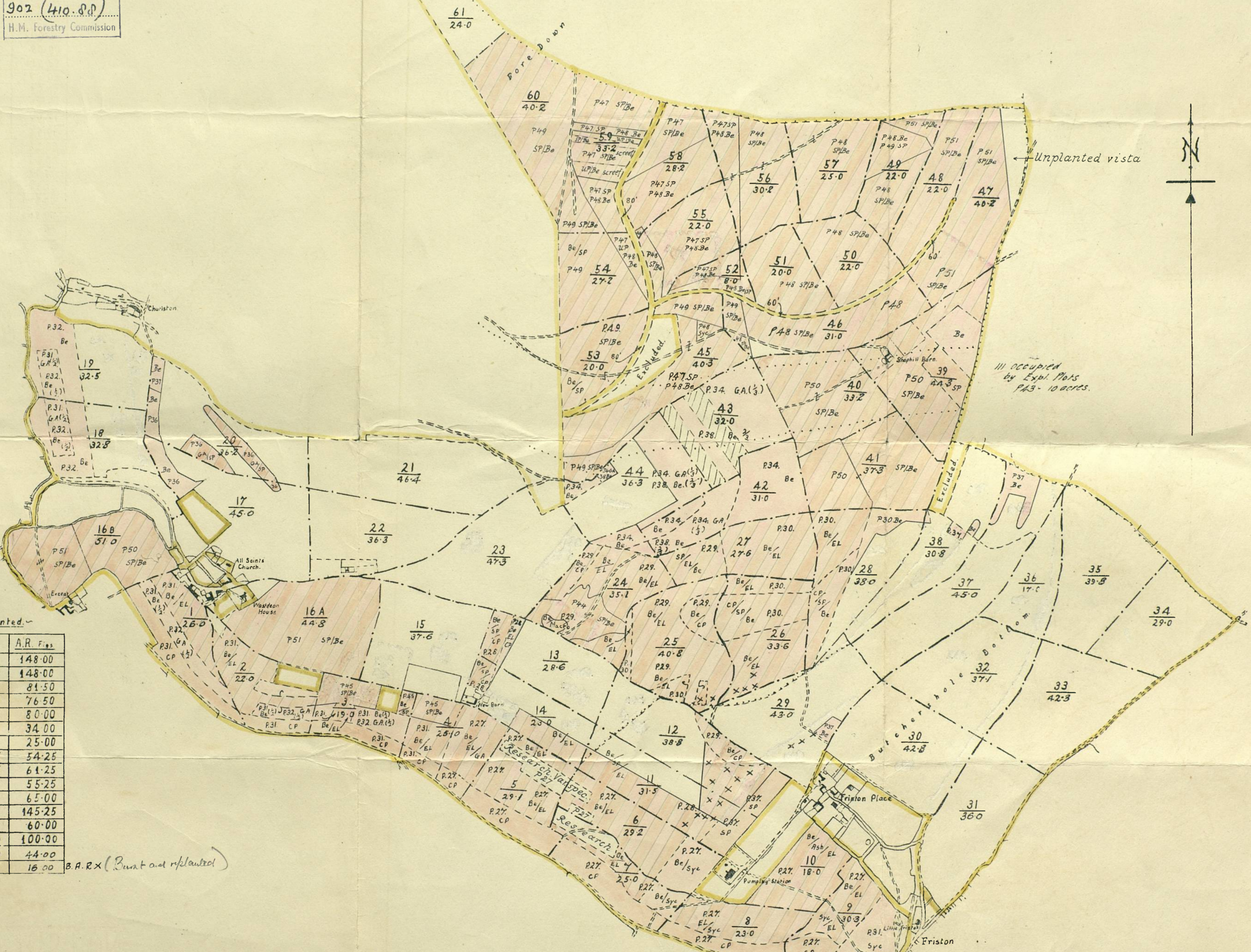
FRISTON

FRISTON

Sussex 79 all.

LIBRARY
I.F.No:
902 (410.8d)
H.M. Forestry Commission

1. Lease from Eastbourne Waterworks Co. 17-11-26. 200 yrs. 1307.744 acres.
 2. " " " " " " 10-7-28. 198 yrs. 677.999 "
- Total:- 1975.743 acres.



Area Wanted

P.Yr	DO ^s Figs.	A.R. Figs.
P.27.	148.00	148.00
P.28.	148.00	148.00
P.29.	81.50	81.50
P.30.	76.50	76.50
P.31.	80.00	80.00
P.32.	34.00	34.00
P.33.	25.00	25.00
P.34.	54.25	54.25
P.35.	61.25	61.25
P.36.	55.25	55.25
P.37.	65.00	65.00
P.38.	145.25	145.25
P.39.	60.00	60.00
P.40.	100.00	100.00
P.41.	44.00	44.00
P.43.	16.00	16.00

B.A.R.X (Burnt and replanted)

Scale:- Six Inches to One Mile.

LIBRARY
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H.M. Forestry Committ.



View of new cottages and Village Pond taken from C.1.
C.21 & 22 in far background.

P.45. C.3. S.P. Be.



The unplanted ground in C.15/16A
with a distant view of the S.P.
in C.13 and 14.

Ploughed unplanted land.
C.17, 20 and 21. Trees in
far background C.21 planted
pre-war.



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P.27. C.7 & 8 Larch Syc.



Waterworks Valley .
In the background P.27, P.31, P.45
C.3, 4, 5, 6, 7 and 8. In the
foreground P.51 before planting.



P.42 - C.43. S.P. & Beech.



Peeling Pit props.

LIBRARY

I.F.No:

902 (410. S.P.)

H.M. Forestry Commission



P.28. C.14 S.P.

P.28. C.11 Douglas fir.



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 I.F. NO:
 902 (410. d.c.)
 H.M. Forestry Commis.



P.46. C.42. S.P. and Be.

P.27) S.P. & Bch.
 P.31) C.4 L. & Bch.
 P.45) S.P. & Bch.



P.30. C.28. Larch & Be.



View from Forester's House.

P.31 - C 1 and 2
 P.45 - C.2



FRISTON FOREST

1

- View of new cottages and Village Pond taken from C.1.
- C.21 & 22 in far background.
- P.45. C.3. S.P. Be.
- The unplanted ground in C.15/16A with a distant view of the S.P. in C.13 and 14.
- Ploughed unplanted land. C.17, 20 and 21. Trees in far background C.21 planted pre-war.

2

- P.27. C.7 and 8 Larch Syc
- Waterworks Valley. In the background P.27, P.31, P.45 C.3, 4, 5, 6, 7, 8. In the foreground P.51 before planting.
- P.42 – C.43. S.P. & Beech.
- Peeling Pit props.

3

- P.28 C.14 S.P.
- P.28. C.11 Douglas Fir.

4

- P.46. C.42. S.P. and Be
- P.27) S.P & Bch
P.31) C.4 L & Bch.
P.45) S.P & Bch
- P.30. C.28. Larch & Be
- View from Forester's House.
P.31 – C.1 and 2
P.45 – C.2