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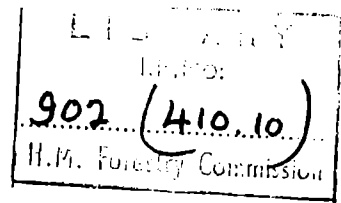
FETTERESSO

FOREST

E(S) CONSERVANCY

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HISTORY

of

FETTERESSO FOREST

1943 - 1951

EAST (SCOTLAND) CONSERVANCY

Fetteresso Forest History

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HISTORY OF FETTERESSO FOREST

CHAIRMAN'S COMMENTS

Mr. H. A. Maxwell's account is very much to the point and should be of great value in clarifying current ideas and also as a record for future foresters in charge of Fetteresso.

Most of the broad problems at Fetteresso have been encountered elsewhere along the east side of Britain, but in detail the incidence of such important factors as soil, exposure and climate, either singly or in combination, will be peculiar to the forest. Such peculiarities can be determined only by local observation of such material as exists in the neighbourhood and of results at Fetteresso as planting proceeds. As regards neighbouring material I presume that Drumtochty is the only large-scale operation and that the proposal to make great use of Japanese and hybrid larches is based to some degree at least on the success of those species there. If it has not already been done it would be worth while making a critical comparison of the respective environments.

It is now routine to plough before planting wherever possible and I need not stress the importance of doing it properly, by which I mean to a sufficient depth and at such an angle to the contours as to conserve moisture and minimise erosion. As I have stated from time to time, I do not favour full ploughing as a general rule. Apart from excessive cost I do not think that any initial advantage in establishment will be fully maintained in later stages of growth. Further I have seen cases in which full ploughing has been a positive disadvantage because the soil simply reverted to the former unaerated condition. Certainly shallow complete ploughing, in spite of favourable early results, is no substitute for deep ploughing.

On heather soils ploughing is not the full solution and with spruces (and other successor species) it is essential to resort to mixtures. For preference the species mixed in should be a deep-rooting one such as Scots pine or Pinus contorta. I believe that to be important. I have always regarded Japanese larch and hybrid larch as shallow rooted. This view has been questioned and the facts should be established as soon as possible.

There is an obvious risk that the spruces may pump on these relatively dry sites.

The oldest planting at Fetteresso is only 7 years, and that is too soon to talk of moribund spruce, which possess remarkable powers of recovery, especially if associated with "nurses". It is important therefore to watch the latter as well as the spruce and record the sequence of events.

So far I have had in mind the parts free from peat other than a depth which is dealt with completely by deep ploughing. On the deeper peat areas, such as I was shown during my inspection of October, 1949, Sitka spruce was making an excellent start and I remarked then on the similarity with the small site at Strathgyle (Durriss) on which such excellent Sitka spruce formerly grew (there are good sample plot data available). Still, what I saw was only a very small and possibly not a representative sample of the Glenbervie Section. Although our knowledge of peat planting and subsequent timber extraction is increasing, there is still a very great deal to learn and caution is necessary.

I am glad to see that more use is being made of pilot plots in advance of full-scale planting. That should be one of the first steps taken when a large area such as Fetteresso, containing much doubtful land, is acquired. We would have saved ourselves much disappointment in the past if we had kept off doubtful ground until the plots had provided concrete information. Such considerations lead also to determination of the rate of planting and I think it is a pity that it has been thought fit to go ahead so fast in the early stages.

Fire protection will become a serious matter when these large areas of coniferous plantations have been established. The best breaks seem to be belts of Japanese and hybrid larches and in the lay-out of plantations full attention should be paid to the fire hazards which will undoubtedly arise.

R.

22/5/51

CONSERVATOR'S COMMENTS

This is a complete and thorough report. It brings out well the way in which our methods of tackling difficult areas have developed from a rather indiscriminate use of the Sitka spruce/Scots pine mixture to a more logical use of species which we know to be doing well on similar sites. To some extent this is due to observation of our own plantations. It is also due to the results now coming from the Research Branch's long-term experiments and to close liaison between that Branch and officers in the field.

In severe exposure at Fetteresso Sitka spruce has shown itself to be hardy. By adopting methods of nursing spruce shown to have been successful at Allerston, it is hoped to have more success in establishing this species, and these methods may also lead to the successful introduction of hardwoods such as birch and sycamore and of other conifers. If Sitka spruce with its nurse of Scots pine or Japanese larch can tackle exposed sites where neither pure Scots pine or Japanese larch would be suitable, pure Scots pine will do well on sheltered sites and Japanese larch, hybrid larch and Pinus contorta will look after places where starting is difficult. There is much difficult ground still to plant at Fetteresso. Already we may learn much from existing plantations and we should not cease to observe and adjust our methods accordingly until planting is completed.

Fetteresso Forest presents some unusually difficult problems of afforestation, for north-east Scotland conditions. Among these are the following:-

- (1) Over wide areas of the forest, the vegetation is largely pure Calluna of remarkably even type. Due to past history of burning and utilisation, this surface vegetation does not provide a clear and simple indication for tree species selection. The peat and soil conditions vary much more widely than the vegetation would indicate, (except to highly expert scrutiny).
- (2) Much of the peat is amorphous and friable, and appears to decompose readily after ploughing and draining. Coupled with phosphate dressing, this has given remarkable initial growth on recently planted areas. There is a prospect that this growth cannot be maintained on the underlying infertile drift, and that this may

affect the growth of certain species (example Sitka spruce) adversely.
This should not apply on the deeper peats, in the first rotation.

- (3) Part of the forest is subject to exposure from winds off the North Sea, which limit the usefulness of Scots pine on one section.
- (4) Maintenance and improvement of the soil fertility calls for special attention on Fetteresso, and we do not yet know the answer.
- (5) On the deep peat areas, crop stability will be a serious matter.

It is fairly certain that we can now plant and "start" conifers successfully at Fetteresso, but we still lack knowledge as to subsequent growth. There is a great temptation to make wide use of Japanese larch and hybrid larch on a short rotation, to act as pioneers and create conditions on which more permanent crops can be efficiently and cheaply established. This may have to be resisted, but there is scope for trying out group or band mixtures. Any such methods will first be fully discussed with Silviculturist (N).

"F.O."

HISTORY OF FETTERESSO FOREST

Fetteresso Forest has been under Forestry Commission management for only seven years. Much has been learnt in that time but there is no certainty that the correct answer has yet been found to all the problems which such a large tract of country presents.

This note will aim to show the developments which have taken place in all silvicultural operations since 1943. These developments derive from experience gained by local officers and as a result of advice given by senior officers during their inspections.

It is hoped that by recording the progress made so far and by indicating the problems which still face us, further and more pointed studies will be undertaken by the local staff.

Date of Acquisition and Area

The unit was acquired in two sections. The main Fetteresso block was purchased from the trustees of the late Major Robert William Duff of Fetteresso and entry was obtained at Martinmas 1943. The Glenbervie section was bought from Mr. Arthur Badenach Nicholson of Glenbervie with entry at Martinmas 1944.

The total area of the unit is 8063 acres which has been allocated as follows :-

<u>Plantable</u>	5167	acres
<u>Unplantable</u>	2378	"
<u>Department of Agriculture for Scotland.</u>)	329	"
<u>Acquired Plantations</u>	189	"

Previous Utilization

Apart from about 70 acres of felled woodland around the holding known as Upper Swanley, previous crops of trees were confined to the valley of the Cowie Water.

The 189 acres of woodland taken over at the time of acquisition are along this valley. They consist of Norway spruce and Sitka spruce plantations which vary in age from 12 to 22 years and were planted by the late Major R. W. Duff of Fetteresso Castle. The original crop grown on the site

of the acquired plantations was mainly a mixture of Norway spruce and European larch although there was pure Scots pine on what is now Compartment 7. No accurate account of the quality of these original woods is available but from existing stumps the spruce would seem to have been good and the others moderate.

The total area of the estate devoted to forestry would never have exceeded 300 acres. The balance was reserved for grazing and for sport.

Climate, Elevation, Geology and Soil

As the problems connected with the afforestation of Fetteresso cannot be divorced from the climate, elevation, geology and soil, it is felt that a brief description of these will not be out of place in this historical account.

In the eastern part of the forest the average annual rainfall is about 30 in. rising to about 35 in. on the western boundary. The prevailing wind is the south-west.

The whole area is subject to severe frosts and in the winter to heavy snowstorms which generally come out of the east or north-east.

Drying winds are troublesome in the spring and early summer.

The elevation varies from 400 ft. along the valley of the Cowie Water to 1200 ft. on the western boundary. In spite of the high hills which bound the unit to the west, there is comparatively little shelter from the prevailing wind.

The hills to the north and west are of granite formation but mica-schist is the predominating geological type over the remainder of the area.

A deep deposit of glacial drift, which contains much broken schist and granite and varies in colour from yellow to red and in texture from sand to sandy clay, overlies the mica-schist and the lower slopes of the granite.

From a soil point of view the unit can very roughly be divided into three parts.

In (1) The valley of the Cowie Water where the original vegetation was probably oak wood, giving way to birch as a result of burning and grazing. The soil approximates to the brown earth type and is believed to be very fertile.

- (2) The block which comprises Swanley, Clachanshiels, the Hill of Trusta and Elf Hill where there is comparatively little deep peat and where the red or yellow glacial drift with many schistose and granite fragments occur within a few inches of the surface. Leaching is common and there is often a 'pan'. At the bottom of the valleys and along the main streams within this block, peat does occur but it is more of the flush type and its silvicultural treatment provides no insuperable problems.
- (3) On the remainder of the area which includes the Glenbervie Section and the rest of the Fetteresso Section, blanket bog with peat to a depth of 5 ft. is a feature of the country. Within this area large granite boulders are frequently found. In some places schistose material occurs amongst the peat layer or immediately below it.

The mica-schist which underlies most of the unit, would hold out promise of reasonable fertility everywhere. The comparative vigour of the early planted spruce would seem to indicate that with proper soil preparation and a correct choice of species, the difficulties caused by height and exposure can be overcome to a great extent.

Acquired Plantations.

4 acres of grey Douglas fir were clear felled in F.Y.51 from Compartment 3. These were badly infected by Rhabdocline and were definitely going back.

As a result there are now 185 acres of acquired plantations at Fetteresso of which 80% are Norway spruce and the balance Sitka spruce.

Both spruces are growing very strongly on the lower slopes of the valley of the Cowie and thinning of the P.28 stands is now in progress. On the upper slopes and throughout much of Compartments 1, 2, 3 and 7 growth is slightly less vigorous. These sites are, if anything too dry for Norway spruce. The vegetational cover appears to have been Luzula sylvatica and pumping may be expected at a later stage, necessitating a shorter rotation.

In Compartment 4 there is a small but interesting group of beech indicating the possibility of the successful cultivation of hardwoods in the more sheltered parts of the Cowie Valley.

Unfortunately all the acquired woodlands are situated on relatively sheltered sites where the soil is of the brown earth type and they are no guide to the problems of the moorland sites which constitute the bulk of the plantable land at this unit.

Recent measurements showed that the mean annual increment of the Sitka spruce on these plantations is 1 ft.4 in. and of the Norway spruce 1 ft. 2in.

Survey of Forestry Commission Operations.

Planting was begun on a modest scale in 1946 and increased in extent until 1950 when the target of 500 acres per annum was passed.

The planting programme has been fixed at 500 acres for the next five years.

The following table shows the areas planted to date.

1946	101 acres
1947	361 "
1948	387 "
1949	409 "
1950	520 "

Preparation of Ground

On account of the sealed surface of the ground resulting from long years of grazing and burning, and because of the leached layer, either with or without 'pan', it was realised from the commencement of our operations that it would be difficult, if not impossible to get trees to start without the intensive cultivation provided by ploughing.

In 1945 a ploughing experiment was laid down in Compartments 20 and 32 which are on Swanley Hill, east of the Burn of Dye.

This experiment which is proving a useful guide to our present operations, was undertaken by the Research Branch with the co-operation of the Conservancy Staff.

The experiment very briefly is as follows :-

One plot was laid out in Compartment 20 and one in Compartment 32.

In each plot ploughing was done by three methods (1) single furrow, 5½ ft.

apart. (2) deep complete and (3) shallow complete.

Planting was done in April, 1946, with alternate double rows of Scots pine and Sitka spruce. The Sitka spruce in 2/3rds. of each plot was given a manurial dressing of $1\frac{1}{2}$ ozs. of ground mineral phosphate, per plant.

Unfortunately the sites chosen for the single furrow ploughing appear to have been tougher, with more heather, than those which were completely ploughed. Even so, the results today weigh heavily in favour of the deep complete ploughing.

The higher cost of the complete ploughing prevented the method from being used elsewhere on Fetteresso but much deep ploughing at 5 ft. spacing with the R.L.R. single furrow plough was carried out over most of P.46 and P.47.

In the early years a proportion of the ploughing was done up and down the hill but by the end of F.Y.47 contour ploughing had become the accepted method.

From F.Y.48 until the present time, our practice has been to use a team of up to six ploughs to cover the large areas involved. These teams usually include R.L.R.s, Cuthbertsons and Solotracs ploughs so that all types of ground could be dealt with.

During F.Y.50 the new Blane's Tine Plough was tried out over a small area of hard ground on Trusta Hill. This tool when adjusted to give deep subsoiling, combined with a reasonable slice, should be a useful implement for the compacted drifts which occur locally at Fetteresso.

The question of ploughing depth is one which has been given a good deal of consideration at this unit and it is still debated. It has been agreed, however, that on sites where there is a heavily leached drift, ploughing should be deep enough to shatter the pan and stir up the layer of deposition. On peat or on flush sites cultivation can be less deep. On such sites it has become our practice to plough for drainage and to obtain a broad slice which will give adequate grass and heather suppression.

Predraining

Although the low rainfall of most of Fetteresso calls for restraint in all draining, there are areas which tend to be so waterlogged that predraining is necessary prior to ploughing. It has been found that this operation can be cheaply and efficiently done by using the Cuthbertson plough with a

broad tracked tractor.

It is vital at Fetteresso that the run of these drains be as gentle as possible to avoid erosion. The deep drift which covers much of the area is easily washed out.

Choice of Species

During the first two years' planting i.e. F.Y.46 and 47, work was restricted to the Swanley Hill Section. Here there was little peat, and the soil was a yellow glacial drift mixed with an abundance of broken schist and granite.

The conditions on Swanley Hill are dry, though extensive flushes occur between the main ridges. Sitka spruce and Scots pine, first in a two line mixture and later two and two in the row, were the species used almost without variation, except for belts of Japanese larch introduced for the purpose of fire protection.

It is now possible to obtain some idea of the success of this mixture on the drier schist areas. Only in a few places are there signs of a definite 'check' but nowhere is the growth really vigorous. Compartment 24 is typical of this dry area.

In 1948 the planting moved westwards to the Glenbervie Section and here for the first time, really deep peat was encountered.

Before work on the peat was tackled the advice of Messrs. James Macdonald and J.A.B. Macdonald was sought. The advice given by these officers was closely followed and the results today are encouraging. The Sitka spruce has grown very strongly and in spite of the warnings given by many visiting officers that the spruce will go into check, there was little evidence of this at the end of the 1950 growing season. The mean annual increment of the Sitka spruce in Compartment 83, P.48 is one foot.

On the deep peats the Pinus contorta has grown with great rapidity but has suffered to a small extent from blackgame and deer damage.

Japanese larch was used on the P.48 area as suggested by the visiting officers. Unfortunately only poor leggy plants were available that year and the suitability of this species for the site can hardly be determined.

In F.Y.49 planting was continued at Fetteresso and at Glenbervie concurrently. On the former section "the mixture" was extensively used as in P.46 and P.47. On Glenbervie, the choice of species followed the same

lines as in F.Y.48 and with equal success.

In F.Y.50 planting was again limited to the Fetteresso Section but there was a marked break away from the traditional Sitka spruce/Scots pine mixture. Much greater areas were planted with Japanese larch than had been attempted previously, and on the advice of the Chairman, some of the Sitka spruce was replaced by Norway spruce in mixture with pine. Small areas were also planted with some of the less usual conifers such as Douglas fir, Tsuga and Thuja and hardwoods were tried on sheltered sites. All these different species were planted with Scots pine nurses.

This break away continued into F.Y.51 with much greater emphasis on Japanese and hybrid larch and with the replacement of Sitka spruce by Norway spruce where moisture conditions made this possible.

Although it is acknowledged that we still have much to learn about the correct choice of species for Fetteresso, the writer believes that it may be of interest to include in this historical account the following general guide which he has passed on to his staff.

Ploughed Ground

On the lower levels where there are grass and rush flushes, Norway spruce should be planted pure.

On similar sites where the heather is beginning to come in Scots pine should be mixed with the Norway spruce.

At the higher levels with similar moisture conditions, Sitka spruce should be planted pure and this applies also to bracken slopes at the higher levels. Scots pine should be mixed with the Sitka spruce if there is strong heather.

On the lower drier slopes Scots pine should be planted without spruce.

Where the schistose drift was close to the surface and conditions dry with exposure moderate to severe hybrid and Japanese larch should be tried.

On the deeper peats there is little alternative at present to the Sitka spruce/Scots pine mixture with Pinus contorta replacing the Scots pine at the higher levels and on the more difficult peats.

Lord Robinson's policy of trying out a wide range of species in mixture with pine on sites which would hitherto have been planted with the Sitka spruce/Scots pine mixture should be continued.

Ground which cannot be ploughed.

On heather slopes where the exposure is not too great and the underlying soil is a light sandy drift Scots pine is a safe choice.

On the harder slopes where there is generally much schistose material, Japanese or hybrid larch should be used. Some Pinus contorta and mountain pine should also be tried in the vicinity of the planting limit. These species would of course be planted pure and be available for interplanting at a later date.

Along the valley of the Cowie there are some excellent grass and bracken slopes where the soil is of the brown earth type and where there is considerable shelter. Here it should be possible to grow good Douglas fir and it is reasonable to suppose that hardwoods such as sessile oak, beech and sycamore could be planted with safety.

Planting Limit

This varies greatly with aspect. On the west facing slopes it may not be higher than 600 ft. On the more sheltered slopes it is believed that we can plant up to 900 ft. without much risk. The policy which is now being followed is to go cautiously as far as height is concerned and to plant the higher ground at a later date.

Type of Plants Used

Up till F.Y.48 large transplants, either 2 + 1s or 2 + 2s had been used at Fetteresso. In F.Y.48 about 7 acres were planted with seedlings of Scots pine, Sitka spruce and Pinus contorta. These seedlings have been assessed in each subsequent year and the results would appear to merit further trials.

Briefly our assessments have shown that average losses were in the neighbourhood of 30%. In some areas over 40% of the seedlings were lost but as the planting had been done at 3 ft. spacing in the rows, only slight beating up was necessary.

The main causes of loss were:-

- (1) Smothering. The planting had been done on a 'step' rather low down in the furrow and weathering of the 'slice' caused the small plants to be covered up.

(2) Frost. Many of the seedlings were planted early in the season about November, and their small size combined with their position in the furrows, rendered them susceptible to frost lift.

Losses from the above could be minimised by late planting and by placing the seedlings on the top of the furrow.

The seedlings which survived have grown very strongly and have developed an excellent root system.

After F.Y.48 the only seedlings planted at Fetteresso have been Pinus contorta which have done very well.

In F.Y.49 and F.Y.50 the bulk of the plants used have been 1 + 1s and these have been entirely satisfactory. An exception was Norway spruce and for this species we continued to use 2 + 2s. For P.51 some 1 + 2 Norway spruce have been allocated.

Method of Planting

The Chairman, on his visit of inspection in August 1945 recommended planting on a step cut in the slice.

'Step planting' gave a measure of shelter to the plant, an important consideration at Fetteresso, and whilst allowing the roots free access to the decaying layer of vegetation, would also give the spruces a measure of stability.

This method of planting was employed from F.Y.46 to F.Y.48.

After 1948 it was replaced by planting on the top of the furrow with the roots embedded in the 'sandwich layer' between the decaying vegetation.

There has not been time to assess the two methods of planting but there are indications that the pine was more susceptible to swinging when planted on the step than on the top of the slice. The spruce on the other hand appears to have grown slightly better on the 'step'. The writer has always been somewhat dubious about the advisability of placing shallow rooted species on the top of a slice as there must be some risk of instability in later years.

In F.Y.49 a few acres of pure Sitka spruce were planted on the bottom of the furrow. Some were lost by smothering but the majority are now well established and are growing vigorously.

On Unploughed Ground

Pine and larch are generally notch planted, using the L notch. On hard slopes, however, notching is replaced by mattock planting.

All spruces are turf planted.

Manuring

Prior to F.Y.48 only 10 acres had been given phosphate (See the note on Mr. Gosling's inspection on the 10th May, 1947, Appendix I).

In F.Y.48 all the plants except the Norway spruce in the flushes were given ground mineral phosphate at the rate of 2 ozs. per plant for the spruces and $1\frac{1}{2}$ ozs. for the other species.

As a measure of economy the amount of fertilizer used in F.Y.49 and F.Y.50 was reduced to $1\frac{1}{2}$ ozs. per plant for the spruces and Pinus contorta and Japanese larch and none to Scots pine or other species.

In F.Y.51 it is proposed to give phosphate to all species, including Scots pine, if they are planted on difficult sites.

On some of the P.48 areas where loss of colour has been detected in the Sitka spruce a second dressing of ground mineral phosphate was applied in F.Y.50. This is in line with the Director-General's instructions given when he visited Fetteresso in October, 1948.

Pilot Plots.

During the visit of Messrs. James Macdonald and J.A.B. Macdonald in February, 1948, it was realised how complex were the problems facing us on the high ground at Fetteresso and how scanty was our knowledge of such sites.

It was then decided to lay out pilot plots. Four of these were selected and included an area of typical schistose drift on Elf Hill, an area of deep peat west of Hobseat and two exposed areas on the Hill of Three Stanes which were just above the accepted planting limit.

The plots were about $\frac{1}{2}$ acre in area and were ploughed before planting with Scots pine, Sitka spruce, Norway spruce, Pinus contorta and Japanese larch. It is still too early to gain much conclusive evidence from these plots but so far the Sitka spruce and the Pinus contorta appear to be the most vigorous. Unfortunately the Japanese larch plants were of the poor overgrown type available that year and they will not give an accurate picture of the merits of this species for the high ground at Fetteresso.

As the planting limit has been fixed somewhat arbitrarily and lower than necessary to avoid undue risks, there is room for more high level pilot plots at Fetteresso.

Rates of Growth

Measurements have been made on a number of different sites but as the oldest Commission plantations are only 5 years old, too much importance cannot be attached to the results.

The growth of Sitka spruce is greatest on the deep peats where the mean annual increment was found to be 1 ft. and the average current year's growth 1 ft. 3 in. On the coarse podsollic drifts the mean annual increment was only 4 in. and the current year's growth 7 in.

Japanese larch has grown well wherever it has been planted and the mean annual increment varied over a number of sites from 1 ft. to 1 ft. 2 in.

The growth of all species has been found to fall off markedly with increasing elevation and exposure.

Research

Seven experiments are current at Fetteresso Forest. Of these, two are the joint responsibility of the Research Branch and the Conservancy, and five are local experiments approved by the Conservator.

The joint experiments include the ploughing experiment which has been mentioned elsewhere in this report and an experiment started in F.Y.50 to determine the survival per cent. of transplants as compared with seedlings.

The local experiments are listed below:-

- (1) A manuring experiment to test the effect of Fison's No.8. Fertiliser on 1 yr. Pinus contorta seedlings.
- (2) An experiment designed to find out if it is possible to establish mountain pine more quickly than is normally possible by careful planting and the application of phosphate.
- (3) A comparison between culls and select plants of Sitka spruce to determine the relative losses.
- (4) & (5) To ascertain the effect of sowing broom to stimulate the growth of Sitka spruce on poor sites. In (4) the broom seed was extracted

from the pod and scalded. In (5) sprays of broom were scattered in the furrow.

The above experiments are all recent and results are not yet available. It would, seem, however, that the cheap method of scattering sprays of broom will not be successful

The Research Branch plan two experiments for Fetteresso during the current year. One will be to determine more accurately the result of planting seedlings at this unit and the other is to be a direct sowing experiment.

Problem Areas

It is doubtful whether a long enough period of time has elapsed since the first plantings were made, to enable real problem areas to be detected.

Compartments 8, 9 and 28 of P.47, however, already show signs of trouble.

In these compartments the Sitka spruce/Scots pine mixture was planted on a compacted drift which was insufficiently disturbed by the ploughing. Indeed in many places the compacted layers have not been broken at all and the Sitka spruce is either moribund or in check.

The best solution here would seem to be to replough, probably with the tine plough and to replant either with hybrid or Japanese larch.

Other areas on Swanley Hill may eventually require similar treatment though so far none are as bad as the compartments mentioned above.

Conclusion

In spite of the obvious difficulties of elevation and exposure, results to date indicate that on most of Fetteresso there is sufficient soil fertility to justify optimism.

We have now a fair measure of confidence in our methods of ground preparation, viz: predraining where necessary, deep ploughing of the compacted drift and shallow ploughing of the deep peats and flushes.

The type of plants now being used are for the most part strong 1 + 1s from heathland nurseries which should ensure a quicker start than was possible with the 2 + 1s and 2 + 2s.

The choice of species is undergoing a steady evolution which should

reduce, if not eliminate the risk of failure. Recent changes in the employment of the various species have been described in a previous paragraph and it will be noted that hybrid and Japanese larch are expected to play a much bigger part on this unit than they have done before.

Even so considerable areas of the spruce/pine mixture will continue to be planted. The original planting of two and two along the furrow will be replaced to some extent by the three or four line mixture on the Allerston pattern.

(Sgd). H. A. MAXWELL,

State Forest Officer

APPENDIX I

Notes from Inspection Reports

<u>Date</u>	<u>Inspecting Officers</u>
31.8.45	The Chairman, Sir Roy Robinson
10.5.47	Sir Samuel Strang Steel and Mr. A. H. Gosling, Director Scotland.
20.6.47	Mr. James Macdonald
4.2.48	Messrs. James Macdonald and J.A.B. Macdonald.
7.10.48	Mr. A. H. Gosling, Director General.
5.10.49	The Chairman, Lord Robinson.
22.11.49	Mr. A. Watt.

(1) The Chairman on 31st August, 1945.

The visit was confined to the experimental ploughing areas on Swanley Hill. Sir Roy Robinson recommended the use of stronger ploughs such as the R.L.R. instead of the Prairie Buster and the Solotrak which had been used for the experiment.

The Chairman also advocated the 'step' method of planting on ploughed ground.

During the visit Sir Roy observed that the compartmenting of Fetteresso would be difficult and would require the services of trained surveyors.

(2) Sir Samuel Strang Steel and Mr. Gosling on 10th May, 1947.

P.46 was visited. The ploughing which was to a depth of 1 ft. was considered satisfactory.

Slagging was not considered necessary on this area but it was suggested that it be carried out over 10 acres as a trial.

Mr. Gosling thought that the blasting of the pines could be avoided if early planting was confined to sheltered flushes. He criticised the Japanese larch fire breaks as being too narrow and advised a more extensive use of this species as an insurance against the failure of other species on difficult ground.

(3) Mr. James Macdonald on the 20th June, 1947.

The ploughed ground in P.46 and P.47 was inspected. Mr. Macdonald thought that the Sitka spruce/Scots pine mixture should be reserved for the most exposed sites and that Scots pine pure be used where there was shelter.

The more extensive use of Japanese larch in groups, if necessary, was recommended.

(4) Messrs. James Macdonald and J.A.B. Macdonald on the 4th Feb. 1948.

These officers were invited to Fetteresso by the Conservator to advise on the treatment of the peat areas in P.48, Glenbervie.

It was agreed that this peat might prove more promising after weathering than it looked immediately after ploughing and the similarity of the Glenbervie peat to that on Strathgyle at Durriss was noted.

The use of the Sitka spruce/Scots pine mixture was recommended for most of the area but it was agreed that it would be interesting to try some pure Sitka spruce and some Sitka spruce in mixture with Pinus contorta on an experimental scale.

(5) Mr. Gosling, Director-General, on 7th October, 1948.

The Director-General was favourably impressed with the growth of the Sitka spruce on apparently dry sites in the P.47 area. He recommended that a second application of ground mineral phosphate be made to any of the spruce areas should there be a decided falling off in growth.

At Glenbervie, P.48, Mr. Gosling expressed some surprise at the large scale planting on these difficult sites and wished that it had been possible to plant up the easier sites first.

(6) The Chairman, Lord Robinson on the 5th October, 1949.

The areas visited were Swanley Hill, Hill of Baulk and Glenbervie and the main points made by Lord Robinson were:-

Deeper ploughing is necessary where there is a compacted drift.

On some sites Norway spruce should be tried out to replace Sitka spruce in the mixture with pine.

No opportunity should be lost to try out a wide variety of species, both conifers and hardwoods with pine nurses.

The application of phosphate to pines should not normally be necessary.

Steps should be taken to eradicate whins at an early stage.

Note:-

As a result of the Chairman's visit, considerable modifications have been made in the choice of species. The weeding of the whin has gone on systematically and whenever possible is used as hard weather work.

(7) Mr. A. Watt, Headquarter's Conservator on 22nd November, 1949.

Mr. Watt's visit was limited to the P.48 area on Glenbervie. He was favourably impressed with the growth of the Sitka spruce on the

deep peats but warned that some degree of checking was inevitable as the heather closed round the trees.

APPENDIX II

Supervision

The following officers have been responsible for Fetteresso Forest since it came under State management in 1943:-

Divisional Officers and Conservators

Mr. L.A. Newton	Divisional Officer	to April 1946
Mr. H.C. Beresford Peirse	Conservator	April 1946 to May 1947
Mr. F. Oliver	Conservator	May 1947 continuing.

State Forest Officer

Mr. T.H. Woolridge	...	...	...	April 1948 to Feb. 1951
Mr. H.A. Maxwell	...	...	...	Feb. 1951 continuing.

District Officers

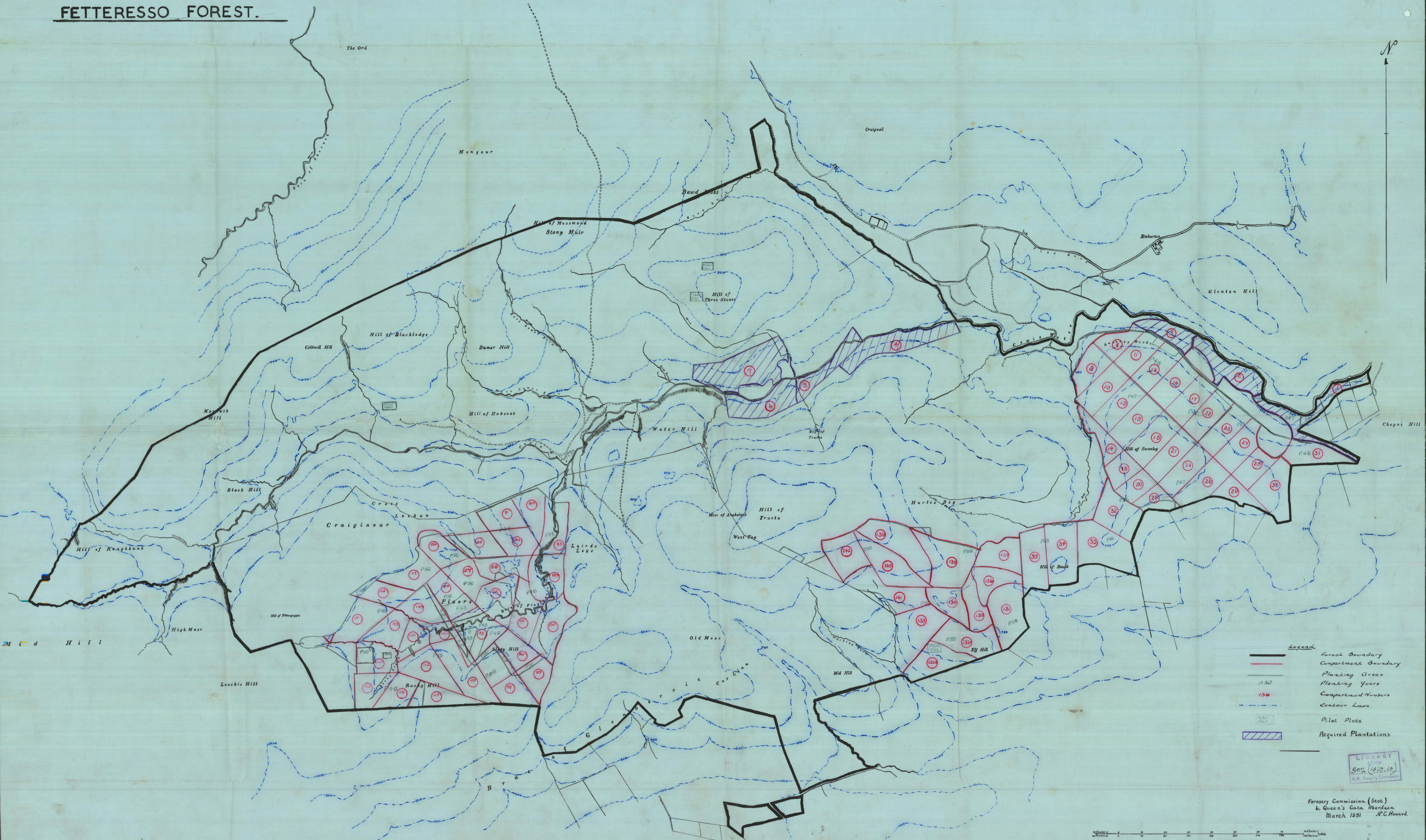
Mr. D.H. Bird	...	...	...	to June 1946
Mr. T.H. Woolridge	...	...	...	June 1946 to April 1948
Mr. H.A. Maxwell	...	...	...	April 1948 to Feb. 1951
Mr. F.J. Donald	...	...	...	Feb. 1951 continuing

Foresters

Mr. A. Ross	...	...	...	May 1944 to Oct. 1948
Mr. D. Anderson	...	...	...	Nov. 1948 continuing

Feteresso

FETTERESSO FOREST.



Forestry Commission (Stat.)
6, Queen's Gate, Aberdeen.
March 1951. J.P.C. Howard.