FORESTRY COMMISSION

HISTORY

OF

LAUGHTON

FOREST

E(E) CONSERVANCY

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HISTORY

of

LAUGHTON FOREST

1926 - 1951

EAST (ENGLAND) CONSERVANCY

HISTORY OF LAUGHTON FOREST

Contents

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GENERAL DESCRIPTION OF THE FOREST

Situation

Laughton Forest is situated in north-east Lindsey, the northern-most of the three sub-divisions of Lincolnshire. The forest in its present form is a more or less compact block stretching to about 3½ miles from north to south by 2½ miles from east to west. The western boundary lies within half a mile of the river Trent. Scunthorpe, the important steel and iron town, lies 9 miles to the North and Gainsborough is 8 miles to the South.

The nearest railway station is at Blyton, 3½ miles to the South, and the village of Laughton (from which the forest takes its name) lies close to the southern boundary.

Area and Utilization

State of the Area when Acquired

The main part of the forest was leased in 1926 and 1941 and the balance purchased in 1929 (vide Table I below). At the time of acquisition the area was a rabbit infested sandy waste. The upland area was a desolate stretch of Molinia and Calluna heath, with boggy hollows and patches of scrub birch. The main hill and some of the lower areas were deserts of blowing sand. There were a few patches of Scots pine scattered over the area. The whole region was used for sporting purposes only.

TABLE I

From	By	Date	Plantations Acquired	Plantable excl. Col.4.	Nurseries	Agricultural	F.W.H.	Unplantable excl. Col.4.	Other Land	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10) - (11)	(12)
	Lease	22.10.26		1646	9		30			1685
	Purchase	4. 4.29		183			16	10		209
		11. 8.33		11						11
	Lease	23. 6.41		239						239
	Totals			2079	9		46	10		2144

TABLE II

Date 30.9.51

		Acres	acres	acres
(a)	Plantations			
	Acquired	Nil		
	Formed by F.C.	2061.5		2061.5
(b)	In hand awaiting planting			
	Blank after felling			
	Blank after fire			
	Tenanted pending planting			
	Other land	21.8		21.8
	Total forest land*		... ...	2083.8
(c)	Nurseries		9.8	
(d)	Farmland		-	
(e)	Forest Holdings		32.3	
(f)	Unplantable land		3.8	
(g)	Other land		15.4	61.3
			Grand total	2144.6

Notes

No land except that under Forest or potential forest land should be included in compartments.

*To agree with total area of compartments.

Physiography

The main block of the forest occupies a bold hill and ridge which rise prominently above the surrounding countryside; its highest point is at Hardwick Hill 132 ft. above sea level. The surrounding country is occupied by the flats of the Trent valley, much of which is only about ten feet above sea level. The main ridge has a steep south-west escarpment.

Geology and Soil

The main block lies on the Triassic and Lias measures, and the lower portions on Recent measures of the Trent estuary. Most of the forest is covered, to a varying depth, by blown sand.

Reddish Keuper marl of the Triassic series is exposed in road cuttings, on the western escarpment, whilst yellow clay of the Lias comes to the surface in several places in the east.

The blown sand varies greatly in depth. It is buttressed against the western slopes in great dunes to well over thirty feet deep, whilst a thinner covering is present over the plateau and ridges. The lower regions are also sand covered, often with dunes. The sand itself is very fine and easily blown by the wind; the area in fact, was mostly a waste of blowing sand and Molinia bogs, before afforestation commenced in 1927. On the steeper slopes run-off in storms is rapid, and soil erosion readily occurs.

Drainage is often a problem. The numerous wet hollows have a widely and rapidly fluctuating water table, and it is often difficult to get drains out of them. The areas on the Trent flats are old marshland, and water is usually near the surface. There are numerous shallow lakes about the area, some several acres in extent. One of the largest is on the highest part of the plateau, apparently held by the clay below the sand.

Vegetation

The land occupied by the Forestry Commission carries vegetation which can be classified fairly easily into four main vegetation types, as follows:-

(1) Molinia. Molinia occupies the poorly drained flats and hollows, and in places is very tufted making the ground extremely rough and difficult to plant. Associated plants are marsh potentilla, marsh gentian, Erica tetralix, dwarf willow, bog myrtle and reed. Initially such areas were turf planted with Sitka spruce, but, (as explained in Appendix IV) this has proved a failure.

(2) Calluna. Calluna is found on the upper slopes and better drained low-land areas. Often associated with a pan formation in the soil. Associated plants are Erica, Deschampsia flexuosa and scattered scrub birch. These areas have mostly been planted with Scots pine and Corsican pine with fair results. Initial check is often considerable and the early growth of the pines is very slow. Better plantation would have resulted had modern ploughing methods been possible in the initial stages; this is clearly borne out in the P.48 Scots pine (area replanted after fire) where the ground was ploughed with an R.L.R. plough.

(3) Bracken. Bracken is general on the better sites and chiefly on the slopes. Bramble and wood sage are common associates. This type of ground has in the main been planted with Corsican pine with very good results. Areas with a patchy crop usually owe their condition to neglect of weeding.

(4) Sand Sedge. (Carex arenaria). This species is common on the drier sandy areas on Hardwick Hill and the higher ground. It is usually associated with dunes of relatively recent formation and has been planted with Corsican pine with satisfactory results.

Meteorology

Rainfall is about 25 in. a year, winter rainfall being predominant. Fire danger is seldom absent from the area from March to November, as the very sandy soil dries out within a few days after even the heaviest rain.

Frost is often severe, and is most frequent on the lower lying areas. Late spring frosts are very frequent (end of May, early June) and often cut back young growth on the lower areas; the higher areas are less affected. Exposure to the prevailing south west wind is considerable on Hardwick Hill, and wind blow is a factor to be reckoned with. Strong cold easterly winds often blow for weeks at a time during March and April. These winds have an extreme drying effect.

Risks

(1) Fire. Laughton carries a high fire risk. Its dry sandy soil, inflammable vegetation, and almost exclusively coniferous plantations, make constant watch essential. An entirely new system of slag roads has been laid down during the past two years, to give quick access to the main parts of the forest (they are also of use for thinning and extraction), and rides previously impassable owing to sand-dunes and stumps have been ploughed and levelled, or bulldozed.

The fire tower was erected in 1946, and is equipped with a telephone in direct contact with the exchange, and with the forester's house. A lorry stands by at the forester's house, in acute danger periods, loaded with a 500 gallon tank of water, and Hathaway pump. Patrols are put on at danger spots at special periods, such as the gull

breeding season, when many people visit the lakes in the forest. Close liaison with the County Fire Service is maintained.

(2) Rodents

Rabbits - When the Forestry Commission started operations, the whole of the area was a huge rabbit warren. They have now been virtually eliminated from the forest, although they still abound outside the fences.

Hares are sometimes a minor cause of trouble especially in newly planted hardwood belts.

Grey Squirrels have not yet penetrated to this area.

(3) Insects

Laughton and Bawtry are the forests where the shoot moth Evetria purdeyi was first recorded as a serious pest on Corsican pine.

In 1945 and 1946 a considerable area was severely defoliated and growth consequently fell off very badly; this led to the use of Corsican pine being abandoned, but by 1949 the attack died out and the affected trees made good growth and this led to the ban on Corsican pine being lifted.

Neomyzaphis abietina has for a number of years been present on an epidemic scale on the Sitka spruce, but population of this insect fluctuates tremendously with the weather. Attacks by a number of other insects, coupled with moisture, climatic and site conditions seem to work jointly to mitigate against the prospects of Sitka spruce at Laughton.

Pine beetles. (Hylastes, Myelophylus etc.) are present everywhere, and rapidly multiply into dangerous numbers whenever suitable breeding material is left about during the spring and summer months. Beetle trapping is carried out as a routine measure wherever test traps show an undue number of beetles.

(4) Fungi, Melampsora pinitorqua occurs on P.48 Scots pine and aspen beside the timber depot and close to the nursery.

Fomes annosus has so far caused no serious losses at Laughton.

(5) Blackgame. When the Forestry Commission took the area over in 1926, blackgame were common and in the old files there are numerous

references to the damage which these birds caused to the newly planted pine plantations. Col. Meynell (the owner of the estate) reluctantly agreed to have the blackgame reduced to a low figure; this reduction was eventually supplemented by disease and eventually the blackcock disappeared from Laughton sometime about the beginning of the war.

Roads and Rides

Laughton Forest is now extremely well served by a series of metalled internal roads, and levelled compartment boundaries and extraction lines This system of roads and rides is valuable alike for fire fighting access, extraction of produce, inspection and movement of labour. The original rides laid down were mostly undressed, loose sand and it is only that real improvement in recent years has taken place.

Metalled Roads. A total length of almost exactly 7 miles of metalled roads has been built, all by local labour. The first of these roads was made in 1946, and further lengths have been added yearly up to 1951.

The Construction is as follows:- 9 ft. wide; 3 layers of different grades of slag; (i) Coarse bank (ii) bank, (iii) dust. Each layer well rolled by 7 ton tractor. One mile can be built in about three weeks.

The first roads cost about £700 per mile or £8/10 per chain or 8/- per yard. By 1951, due to the rise in cost of transport and materials, the cost per mile had risen to about £930 or £11/12/6 per chain.

Of this cost,	7%	=	Cost of labour
	7%	=	Hire of roller and fuel
	86%	=	Cost of slag and dust delivered to site.
	100%		

The average quantities used per chain are 5 - 7 tons of bank slag and 2.7 tons of slag dust.

Ploughed and Graded Rides. A number of the main compartment lines have been ploughed (towards centre from both sides) after stump removal, and then harrowed and graded by light bulldozer, and allowed to re-vegetate with grass and sparse heather. Such rides are easily maintained and passable for light motor traffic almost throughout the year.

Local Supervision and Labour

Laughton is run by a Forester and a foreman both of whom live in the forest. The labour position was difficult during the war years, but

improved considerably from 1945 until by 1949 the regular force numbered almost forty, of whom 8 or 10 were women. During 1950 and 1951 there has, however, been a steady decline and at present (November 1951) the regular workers number only 22 (12 men and youths and 10 women), a figure which is 40% to 50% below the desired labour requirements. At various times in the past other sources of labour have been available temporarily, notably Irishmen and German prisoners of war in F.Y.1948. The position can hardly improve until there is an adequate number of houses. Six new houses, are now nearing completion and should result in a partial recovery of the labour strength requirements.

There are 5 workers holdings, with a total of 32.3 acres.

SILVICULTURE

History of the Development of Forestry Commission Plantations

It will be convenient to consider the progress of work at Laughton under five periods, each of which has fairly well defined characteristics.

(1) Period I, 1927 to 1934.

The unit was opened in October 1926, when the lease in respect of 1685 acres was concluded with the Meynell Estate. It was decided that Corsican pine was the most suitable species for the bracken, sand sedge and heather areas and Sitka spruce for the wet Molinia areas. A steady programme of planting was carried out throughout the 8 year period, resulting in a nett acreage (at 1951) of 1522.7 acres - or an average of 190.4 acres per year.

Corsican pine was the principle species planted; in the first three years pure blocks of Scots pine were also planted, and Corsican pine was sometimes planted in mixture with Scots pine or Sitka spruce. From 1930 onwards Scots pine was not planted, though natural regeneration was accepted as part of the crop in a number of compartments. Every year a few acres of Black Italian Poplar, of doubtful strain was planted, a few acres of Japanese larch, European larch, Thuya, Tsuga, ash and Pinus ponderosa were tried experimentally.

In general, the planting programme seems to have been too fast for the limited funds - (and therefore labour) which were available, and the weeding was not done as thoroughly as required. Very extensive drainage operations

were necessary. Rabbits, blackgame, frost and fire all caused losses.

The irregular growth and patchy condition of the young plantations have all along been a feature of Laughton Forest, vide for example this extract from the report on Sir Roy Robinson's visit in 1938 "Various factors have contributed to this condition (uneven growth) - faulty choice of species, lack of soil cultivation, poor plants, bad planting and lack of weeding. This is an example of early establishment being sacrificed to initial cheapness of one or other of the essential operations."

(2) Period II, 1935 to 1940

By 1935 almost all available land had been planted up, and the economic crisis was in full swing. Practically no further planting was done during the 6 years.

The irregular growth at Laughton, and the defects of early technique which caused it are very lucidly summarised by Sir Roy Robinson above.

(3) Period III, 1941 to 1945

An additional area of 239 acres was leased from the Meynell Estate in 1941, and this, together with areas of the original plantings which had been lost by fire provided the land for a second period of planting (3 years), of which 227.3 acres still exist. No new work was done in 1944 and 1945 due to labour difficulties.

During 1941, 42 and 43 no further Sitka spruce was used, planting being restricted to Corsican pine and Scots pine which were sometimes planted in pure blocks and sometimes in mixture.

(4) Period IV, 1946 to 1948

With the easing of the labour position which was a sequel to the end of the war in Europe in 1945, a fresh programme of new planting was undertaken. The land available was the remainder of the second lease, on which war conditions caused work to be closed down from 1944, areas of reserved timber felled by the Timber Production Department and areas of the earlier plantations destroyed by fire. The outbreak of Evetria purdeyi on Corsican pine in 1945 led to the disuse of Corsican pine from 1946 to 1949 (inclusive). The use of beech below an overwood of birch in 1946 was an important innovation.

Thinnings were started in the oldest Corsican pine areas in 1948. Good roads and rides were being laid down. Sitka spruce in the old plantings was finally condemned.

(5) Period V, 1949 to 1951

By the end of 1948 no large areas of land remained unstocked, and only 10.7 acres of new planting was done during the three years of Period V.

Conversion of failed Sitka spruce areas to pine was decided upon and taken in hand, species and methods being as follows:-

(i) 1948 - 2.0 acres. Pilot experiment. Scots pine between Sitka spruce rows.

(ii) 1949 - 80.6 acres. All Scots pine between the Sitka lines. No Corsican pine used.

(iii) 1950 - 59.4 acres. Scots pine (96%) and Corsican pine (4%) planted in open after clearing Sitka spruce (and a little Black Italian Poplar).

(iv) 1951 - 74.0 acres. Scots pine (90%), Corsican pine (21%) and beech (4%) in the open after clearing Sitka spruce (and a little Black Italian Poplar).

Total to date 216.0 acres.

The swing back to Corsican pine (banned as a result of the 1945 Evetria scare) was accelerated by the views expressed by the Chairman when he visited the area in April 1950. There is, however, divided opinion as to the extent to which Corsican pine should be used on the wettest and most difficult of the old Sitka spruce areas yet to be converted to a pine crop. Scots pine is incomparably easier to establish on the worst areas, but Corsican pine in view of its higher volume yield is desirable, and the possible solution on the worst sites where cultivation is impracticable, is the use of an even mixture of Scots pine and Corsican pine; where deep ploughing is possible, the use of Corsican pine planted on the furrow top is advocated.

Thinnings were undertaken on a large scale from F.Y.1948 (last year of preceding period), and almost 600 acres have received a first thinning to date. Corsican pine first thinnings have yielded an average of about 325 cu.ft. per acre. Some 200 acres of Corsican pine are due for their second thinning during F.Y.1952.

High Pruning. During F.Ys 1949 and 1950, 129.6 acres of the best Corsican pine areas were high pruned. The work was done in piece work by the female labour using long handled saws. All branches were removed up to 14 ft. to 15 ft. (giving a branch free bole of from 15 ft. to 17 ft.) The number of stems pruned varied from 100 to 300 per acre; the work was done at a flat rate of 2½d per stem.

The Chairman, in his 1950 visit, expressed his satisfaction with the way in which both thinnings and high pruning had been carried out.

General notes on Plantation Technique

(1) Preparation of Ground prior to Planting

There is nothing of special interest to record. In general, the areas planted were open heath, and clearance was only necessary in scrub birch areas. Very extensive drainage was necessary on the Molinia areas. The loose sandy nature of the soil, which continually seeps into the deeper drains, makes constant maintenance necessary. All areas had to be fenced and carefully cleared of rabbits before planting.

(2) Choice of Species.

The initial choice of the main species was Corsican pine (and Scots pine) for the bracken, sand sedge and heather vegetation types and Sitka spruce for the Molinia. The Chairman, who was responsible for or at least approved the initial choice of the main species summed up the resulting success 20 years later as follows:-

(a) This area is quite unsuitable for Sitka spruce.

(b) The Corsican pine shows good promise.

The following are brief notes on species tried:-

Corsican pine. This species has been very successful so far, in spite of initial neglect of weeding, poor ground preparation and poor planting, which has resulted in generally patchy and irregular crops. Poor quality stock (ursuline) was planted in some areas (e.g. P.31 Compartments 42, 44 and 45) but in general the Laughton Corsican pine is of excellent type. It does best on sand sedge and bracken vegetation types, and light heather/ Molinia without a bad pan. It checks badly on some of the thick heather sites.

Scots pine. Scots pine has been planted quite extensively especially during the period of the Evetria purdeyi attack (1945 - 1949), when considerable areas suitable for growing good Corsican pine were stocked with Scots pine (e.g. the burnt area on either side of the road up to Laughton Lodge, replanted P.48). The Chairman criticised the excessive use of Scots pine in his 1950 visit . Scots pine regenerates freely at Laughton - the natural regeneration areas at Peacock Wood which arose from mother trees left by the

Timber Production Department when carrying out war-time fellings, are especially notable. Scots pine can play a most useful role on the wettest Molinia areas, where failed Sitka spruce areas are being converted.

Sitka spruce. Sitka spruce has been largely turf-planted on wet Molinia areas from 1927 to 1934 - there are some 400 acres with Sitka spruce as the principle species. In general it has failed hopelessly. Up to 1942 Inspecting Officers (including the Chairman 1942), though commenting on the slow growth and the effects of frost seemed to think that the Sitka spruce was doing reasonably well, but by 1947 opinions had hardened and the species was condemned as a more or less complete failure at Laughton. Conversion of the worst Sitka spruce areas began in 1949.

European and Japanese larch. These were planted on a small scale in the early years, but the results were very indifferent.

Tsuga heterophylla. A small experimental plot was planted in P.31; the results are distinctly interesting. When visiting in 1942, the Chairman remarked that this Tsuga was "about the best thing he had seen that day". It deserves further attention.

Thuya plicata. A small plot was planted in P.31 near the Hemlock. It looks fairly promising, but is patchy.

Pinus contorta. Contorta was used on quite a considerable scale to beat up Corsican pine areas in early and mid 'thirties'. In some areas it suffered from Tortrix, but it seems to have grown out of this. At places, its height growth is almost holding its own with Corsican pine, but is obviously going to be a low volume producer.

Pinus ponderosa. A 2.0 acres experimental plot was planted near the nursery in 1927. It looks healthy but is inferior in growth to Corsican pine, Scots pine or Pinus contorta.

Beech. Experimental plot and larger plantings made in 1946 show promise - may be used in time as an underplanting species to the pines on the best soils.

Birch. The natural birch at Laughton is a very poor type. It is useful as a nurse on frosty sites.

Poplar. Several acres of Black Italian Poplar were planted annually from 1927 to 1934. The species were pit planted at 9 ft. x 9 ft. The results have been disappointing except on one or two small areas of "warp"

(fen) land on the western edge of the forest. The varieties planted are not good - except for one type which is probably Populus serotina. Balsam poplar near the nursery is cankered.

Grey alder. Small quantities of grey alder planted in hardwood belts etc. have done fairly well (vide trees close to Laughton Lodge where common alder and grey alder may be seen side by side).

Red oak. This species has been planted only in recent years in amenity belts. It is too early to judge results, but it seems promising.

Planting

(a) Spacing. 4½ ft. x 4½ ft. and 5 ft. x 5 ft. were used as standard spacings initially. Failures resulting from poor technique have left many areas very gappy and irregular.

(b) Type of Plant. The early plantings often had to be made with unsuitable planting stock - in some cases the desired species was not available, and substitute species were used. Some ursuline Corsican pine was used, but not extensively.

(c) Methods of Planting. The Sitka spruce was mostly turf planted. All other species were notched.

(d) Annual Rate of Planting. See Appendix III.

(e) Manuring. This was considered for difficult checked areas, but there are no records of it having been applied.

Ploughing

Modern ploughing methods were not used. Some ploughing was done in 1928 areas, which were markedly better in establishment rate and early growth over unploughed P.29. A considerable part of the P.48 Scots pine area was deep ploughed, (R.L.R.) and results have been very satisfactory.

Beating Up. In the older plantations beating up was done on a very large scale, following heavy casualties arising from faulty initial work. The operation was continued unduly long - resulting in very irregular crops.

Weeding. This was inadequately attended to in the earlier years.

Mixture of Species. These were tried on a limited scale - e.g. mixtures of Corsican pine/Scots pine, Corsican pine/Scots pine/Sitka spruce and European larch/Sycamore - these have no special merits.

Use of birch as a shelter to Sitka spruce and beech and other hardwoods in hardwood belts has proved efficacious.

Rates of Growth. See Appendix III

Past Treatment of Established Plantations

The first real thinnings commenced in F.Y.1948 and continued for three years. Only negligible areas were thinned in 1951. Some 200 acres of Corsican pine first thinned in 1948 are due for their second thinning in F.Y.1952. The work done in F.Y.48 - 50 is summarised below:-

F.Y.	Area thinned (acres)	Wages E.17 £	Other E.17 £	Total Expenditure £	Revenue from sale of produce £
48	219.9	2473	918	3390	4731
49	237.5	2141	466	2607	5994
50	110.5	1303	78	1382	2453
Total	567.9	5917	1462	7379	13178

Produce from above thinnings

F.Y.	Area (acres)	Vol. (cu.ft.)	Vol. per acre (cu.ft.)
48	219.9	71246	323
49	237.5	46733	197
50	110.5	27313	240
Total	567.9	145292	250 average

Conclusions

(1) Labour. Lack of labour, (together with certain technical errors), in the early years of Laughton led to irregular and patchy plantations.

(2) Choice of Species. Corsican pine is in general the most suitable species for Laughton. Scots pine is useful where it regenerates naturally and in exceptionally difficult areas. Sitka spruce is entirely unsuited to the locality.

(3) Methods of Forming Plantations. The more difficult areas i.e. the wet Molinia areas would undoubtedly give better results if dealt with suitably with modern heavy machinery technique.

(4) Thinning and High Pruning. The methods of thinning and high pruning (in the best areas only) which have been applied during the four years 1948 to 1951 are satisfactory.

(5) Roads and rides. An excellent system of roads and rides has been established at exceptionally low costs. These roads are invaluable for fire protection, extraction of produce and movement of labour and inspecting officers.

(6) Fire Risk. The fire risk at Laughton is extremely high. Preparedness and constant vigilance are necessary.

APPENDIX I

Notes on Inspection Reports of Special Interest, Laughton Forest

15.9.33. Assistant Commissioner.

Nursery. Suggested poplar screen outside and beech or Norway spruce inside, to check windblow. Corsican pine, P.27. Method of settling blowing sand with Carex.

Sitka spruce P.30 on turves. Small area ploughed in P.28 shows good growth. Red oak suggested as suitable species.

Pinus ponderosa, P.27 in Compartment 16 stayed in check for 3 years and then grew steadily.

12.10.33. W.W.Pritchard (Assistant Commissioner)

Nursery. Adverse effects of drought, frost and cock chafer noted.

Pruning of Tortrix damaged and forked pines recommended. Also slag on small scale in large blanks in P.27.

Acceptance of natural birch and Scots pine.

10.11.37. W.L. Taylor (Assistant Commissioner).

Nursery. Sheltering hedges having good effects. Excellent beech, Douglas fir and Sitka spruce.

Compartment 16 Good growth of Pinus contorta beat ups, coarse growth of Pinus ponderosa with Tortrix damage compared unfavourably with nearby Corsican pine.

Compartments 24 and 25, P.32. Poor growth of ursuline pine, the slow but promising progress of Sitka spruce on Molinia, invasion of birch.

P.31 Compartments 64, 63 and 61. Tsuga commented on. Desirable to plant more of it. Compartment 61, Poplar doing badly, may be given over to natural birch.

Natural regeneration of Scots pine abundant in Peacock wood etc. Both parent trees and young crop appear to be of very poor type. Occasionally groups of natural larch good.

18.1.38. Sir Roy Robinson (Chairman)

P.32, Compartments 24 and 25 Sitka spruce on Molinia slow but have made their best shoots in F.Y.37 and "can be considered promising". Shelter of birch and gorse evident - beware of whipping. Detailed considera tion of treatment of natural birch - how to strike a balance. Invaluable against frost, but whipping and smothering a great danger. Very variable growth on apparently comparable sites discussed at end of report in detail. A feature of Laughton. Contributing factors - faulty choice of species, lack of soil cultivation, poor plants, bad planting and lack of weeding, etc

23.7.40. A.P. Long (Acting Assistant Commissioner).

Nursery. Frost again damaged beech and ash. Oak good and conifers satisfactory.

Extension at Forester's House. All stock growing well, particularly large beech. As far as possible the main nursery should be used for propagating frost hardy species only.

General irregularity of plantations at Laughton commented upon, but considered they will even up with age.

Corsican pine and Sitka spruce are the species to be encouraged. Some superior blocks of Sitka spruce apparently originated from extra large plants 3+2 and 4+2.

Corsican pine, P.28 ploughed area markedly superior to P.29 unploughed.

Ploughing gives better more even growth and better stocking. Rabbits said to be on the increase.

17.7.42. Sir Roy Robinson (Chairman)

Sycamore in broadleaved belts very slow and poor.

P.31, Compartments 44, 45 and 42. Uneven growth, weeding still being done on bad heather areas and plants slowly coming out of check. Ursuline pine of same age as good Corsican pine only one-third height of latter.

P.30, Compartments 40, 41 and 39. Sitka spruce of better growth. Frost level about 4 ft. above ground - plants then do well.

Larch - not a species to be encouraged in this forest.

Tsuga. Small plots seen in Compartment 64 P.31 and Chairman remarked that it was about the best thing seen that day.

Poplar thinnings, several seasons overdue - shortage of labour.

Scots pine natural regeneration in Peacock Wood

Barking of stumps as an insect precaution (ordered by Mr. Hanson) not to be continued.

Summing up, the Chairman notes at foot of report:- "In general growth on the difficult sites has improved since my last visit, but it is a slow business. No doubt our more modern methods of afforestation would have been more successful."

19.9.47. W.L. Taylor (Director General)

Sitka Spruce Areas. Everywhere unsatisfactory. Considered that the better areas should be left. The worst areas should be converted to Scots pine.

Poplar. Pruning to be done as soon as possible.

Fire rides. Present work of ploughing and levelling compartment boundaries as fire rides passable for motor traffic is excellent.

11/12.11.47. A.H.Gosling (Deputy Director General)

Sitka Spruce Areas inspected. Five species of insect involved as well as frost. Approved that the worst areas of Sitka spruce should be converted to Scots pine by interplanting the rows.

Compartments 30 and 32, Scots pine and Corsican pine P.41 good example of satisfactory crop of pines on what was a poor Sitka spruce area sown in F.Y.40. Growth of Sitka spruce puzzling.

Areas to be converted should not include any carrying Sitka spruce with an average height growth to 6 ft. and over and fully stocked. Still some chance that the better areas of Sitka spruce would make a crop.

10.4.50. Lord Robinson (Chairman)

A general visit. Points made by the Chairman were:-

(1) A pity so much Scots pine planted since the Evetria purdeyi scare in 1945.

(2) Area is quite unsuitable for Sitka spruce.

(3) Corsican pine shows good promise.

(4) First thinnings and pruning suitable.

(5) Continue to sell Sitka spruce Christmas trees from areas being converted.

APPENDIX II

Supervisory Staff in charge of Laughton Forest

(From Inception of Unit, 1926 to November 1951)

Year	Forester Always:- Laughton Forest	Dist. Officer 1. East Midlands District. 2. From 1.1.46 No.I District E (E)	Divl. Officer (or S.F.O.) 1. Division 5 Up to..... 2. East (E) Div. To 31.12.45 3. S.F.O. from 1.1.46.	Conservator East (England) (from Inception of Conservancies)
	From Opening of Unit:-	From Opening of Unit:-	From Opening of Unit:-	-
1926	W. Tribe	D.C.D. Ryder	H. M. Steven	
1927				
1928				
1929				
1930				
1931				
1932		C.A. Connell (1.4.1932)		
1933			E. Wynne-Jones (1933)	
1934	J.McGlashan (1934)			
1935		J.M. Ross (1.10.1935)		
1936			J. MacDonald (1936)	
1937				
1938				
1939		W.V. Jackson (4.9.1939)	C.A. Connell (4.9.39)	
1940				
1941				
1942	H. Adams (Feb.1942)			
1943				
1944				
1945			C.A. Connell (To 31.12.45)	
1946		R. Carnell (25.9.1946)		≡ C.A. Connell (1.1.1946) A.D. Hopkinson (March '46)
1947		S.R. Payne (1947)	G.W. Backhouse (1947)	
1948				
1949			G.F. Ballance (Aug.1949)	G.W. Backhouse (Aug. 1949)
1950			A. Paterson (Sept.1950)	
1951		T.V. Dent (Jan.17th '51)		
1952				
1953				
1954				
1955				

≡ NOTE:- Conservancies took the place of territorial Divisions after the F.C. re-organisation, from 1.1.1946.

APPENDIX III

Rates of Growth

Rates of Growth of Plantations - Laughton (First line in last column current years growth)

Item	Cpt. Number	Species	P. Year	Age when Measured	Site Factors					General Conditions of Crop	Height Measurements of Dominants		
					Soil	Drainage	Vegetation	Altitude	Frost/Exposure		Total Av; Height	Mean Annual Ht. Increment	Current Annual Ht. Increment
1	76	C.P.	27	24	Sand over marl	Good	Bracken	122'	Aspect E. Sharp slope Highly exposed to E. winds.	A very fair crop, height growth was reduced for 4 years with Evetria.	25'3" 20' 30'	12½"	2 years 22" 18"
2	76	C.P.	27	24	Sand over marl	Good	Sedge grass	120'	Aspect W. Sharp slope No shelter from winds.	A very fair crop, height growth was reduced for 4 years with Evetria.	28'10" 25' 32'	14½"	16" 18"
3	89	C.P.	27	24	Sand over marl	Good	Bracken	120'	Aspect N. Sharp slope No shelter from winds.	A very fair crop, height growth was retarded for 4 years with Evetria.	27' 25' 30'	13½"	21" 22"
4	79	C.P.	27	24	Dune Sand	Good	Sedge grass	40'	Aspect S.E. slight slope. Light frost.	This plot was actually on a dune the crop being superior to that on level land.	31' 28' 35'	15½"	20" 24"
5	79	C.P.	27	24	White sand	Good	Heather	40'	Aspect S.E. slight slope. Light frost.	An irregular patchy crop.	22½' 10' 30'	11"	20" 22"
6	80	C.P.	27	24	Sandy gravel on gravel excavation.	Good	Nil	50'	Aspect S.E. Slight slope. Frost slight.	A very good regular crop on the site of gravel excavation.	34' 30' 38'	17"	19" 19"
7	78	C.P.	28	23	Dune Sand	Good	Heather and Bracken.	86'	Aspect W. Slight slope Exposed to W. winds.	A fair regular crop	29'6" 28' 35'	15"	21" 24"
8	24	C.P.	30	21	White sand	Poor	Heather	80'	Aspect S. Nearly flat Frost moderate.	A very poor irregular crop due to a PAN (improving)	18'6" 10' 20'	10½"	22" 24"
9	43	C.P.	30	21	Sandy loam	Moderate	Bracken	60'	Aspect S. Slight slope Frost moderate.	A good regular stand	30'6" 28' 35'	17½"	24" 22"
10	2	C.P.	31	20	White sand	Bad	Molinia	70'	Aspect W. Slight slope Rather frosty.	A fair crop which is improving	24' 15' 30'	14½"	20" 17"
		See Items 54 & 55 for C.P.F.32											
11	109	C.P.	33	18	Estuarine sand	Good	Bell, Heather	10'	Aspect S.W. Slight slope. Frost moderate.	A very irregular crop due to Nat. S.P. replacing many of the C.P.	21'6" 18' 25'	14½"	20" 21"
12	104	C.P.	34	17	Estuarine sand	Good	Ex.arable Fine grass	13'	Aspect S. Nearly flat. Frost moderate.	A good regular crop	26' 20' 30'	18"	30" 32"
13	95	C.P.	39	12	Light sand	Fair	Bracken and grass.	20'	Aspect W. Slight slope. Slight frost.	This area owing to a large % of Ursuline was B.U. with S.P. F.Y.39 is now a fair regular crop.	13'4" 10' 15'	13¼"	24" 26"

Item	Cpt. Number	Species	P. Year	Age when measured	Site Factors					General Conditions of Crop	Height Measurements of Dominants		
					Soil	Drainage	Vegetation	Altitude	Frost/Exposure		Total Av: Height	Mean Annual Ht. Increment	Current Annual Ht. Increment
14	37	C.P.	41	10	Dune sand	Good	Sedge grass	20'	Aspect W. Nearly flat. Slight frost.	A full crop but very irregular height growth	7'9" (4' – 11')	9"	2 years 18" 14"
15	60	C.P.	42	9	White sand	Good	Heather and sedge grass	25'	Aspect S. Nearly flat Slight frost.	A very patchy crop, much better on pure sedge grass beaten up with Scots pine.	4'6" (2'6" – 9')	6"	12" 6"
16	81	C.P.	42	9	Sand over gravel.	Good	Ex arable grass	76'	Aspect S.E. Slight slope Exposed to E. winds.	A very good regular crop growing rapidly.	10'10" (7' – 14')	14½"	27" 25"
17	57	C.P.	42	9	Grey sand	Fair	Bracken	76'	Aspect W. Slight slope Slight frost.	Fairly regular, rapid growing crop, not so good on heather areas.	10' 9" (8' – 12')	10¾"	8" 12"
18	62	C.P.	43	8	White sand	Moderate	Light grass ex-agriculture	30'	S. Aspect. Nearly flat Rather frosty.	Rather irregular at this point, much better in luxuriant grass.	5' 5" (2½' – 9½')	8"	17" 14"
19	87	C.P.	46	5	Dune sand	Good	Sedge grass and Lichen	25'	Aspect W. Slight slope Light frost.	A fair regular crop, growing rapidly.	3' 3" (2'6" – 4')	8"	14" 11"
20	63	S.P.	27	24	White sand	Fair	Grass	33'	Aspect W. Slight slope Slight frost.	A fairly clean regular crop	31' (28' – 35')	15½"	18" 17"
21	78	S.P.	28	23	White sand	Fair	Molinia and bracken	55'	Aspect S. Light slope Slight frost.	Originally S.S. areas B.U. 90% with Scots pine rather coarse due to wide spacing.	31' (28' – 35')	16"	18" 17"
22	37	S.P.	41	10	White sand	Fair	Molinia	20'	Aspect W. Nearly flat Slight frost.	A full regular crop	15' (12' – 18')	18"	18" 15"
23	60	S.P.	42	9	White sand	Moderate	Juncus Ex. Agric.	25'	Aspect S. Nearly flat Rather frosty.	A fair regular crop	10' (7' – 13')	13"	7" 13"
24	82	S.P.	42	9	Sand over gravel.	Good	Ex arable	45'	Sharpe slope. Aspect E. Exposed to E. winds.	A good regular crop growing rapidly.	10'8" (8' – 12')	14"	16" 12"
25	82	S.P.	43	8	White sand	Good	Heather	25'	Aspect S. Nearly flat. Slight frost.	A fair regular growth.	8' (6' – 12')	12"	18" 22"
26	95	S.P.	44	7	Light sand	Fair	Bracken and grass.	20'	Aspect W. Slight slope Slight frost.	The original plantation was F.Y. 39 of C.P. with a large % of Ursuline. S.P. have caught up with C.P.	12'9" (10' – 15')	22"	33" 24"
27	82	S.P.	46	5	White sand	Good	Heather	45'	Aspect S. Nearly flat Light frost.	A fair crop, with regular growth.	3'8" (3' – 5')	9"	17" 13"
28	84	S.P.	46	5	Dune sand	Good	Sedge grass	25'	Aspect W. Slight slope Light frost.	A fair regular crop should have been C.P.	6'3" (5' – 7')	15"	23" 13"

Item	Cpt. Number	Species	P. Year	Age when Measured	Site Factors					General Conditions of Crop	Height Measurements of Dominants		
					Soil	Drainage	Vegetation	Altitude	Frost/Exposure		Total Av: Height	Mean Annual Ht. Increment	Current Annual Ht. Increment
29	55	S.P.	46	5	Grey sand	Fair	Bracken re-afforested	72'	Aspect S. Slight slope slight frost.	A very regular rapid growing crop.	6' 7'9" 9'	18½"	2 years 25" 22"
30	54	S.P.	47	4	White sand with Pan	Moderate	Heather	70'	Aspect N. Nearly flat rather frosty.	Very irregular poor growth due to pan, on small portion only.	1'3" 1'9" 3'	5¼"	5" 2"
31	54	S.P.	47	4	Dark sand	Moderate	Scrub birch re-afforested	70'	Aspect N. Nearly flat Slight frost.	An excellent rapid growing crop.	4' 6' 7'	18"	24" 17"
32	52	S.P.	47	4	White sand	Moderate	Molinia	70'	Aspect N. Slope slight rather frosty	A fairly regular crop occasional gaps, due to low wet portions.	3' 5' 6'	15"	17" 18"
33	53	S.P.	47	4	Grey blue clay	Moderate	Luxuriant grass ex-arable.	75'	Aspect N. Nearly flat Rather frosty.	A fair regular crop	3' 4'6" 6'	13½"	16" 10"
34	81	S.P.	48	3	Sand over gravel	Good	Grass and bracken	67'	Aspect S. Slight slope Exposed to E. winds	A good regular crop growing rapidly.	2'6" 3'8" 4'4"	14¾"	18" 9"
35	80	P.C.	30	21	Sand	Fair	Heather and lichen.	60'	Aspect S.E. Flat. Slight frost.	A small area of C.P. R.U. fairly regular growing rapidly few signs of Tortrix.	18' 26' 28'	14"	18" 12"
36	104	P.C.	34	17	Estuarine sand	Good	Fine grass ex arable	13'	Aspect S. Nearly flat Frost slight.	A dense regular crop, Tortrixed heavily during youth, now appears to be free.	15' 20'6" 25'	14"	12" 12"
37	98	P.pon.	27	24	Light sand	Moderate	Scrub birch	13'	Aspect W. Nearly flat Rather frosty	Fair but patchy, cleaning operations were neglected during youth.	25' 27'9" 30'	14"	18" 15"
38	24	S.S.	30	21	White sand	Poor	Molinia	80'	Aspect S.W. Nearly flat Very frosty.	A very patchy irregular crop	3' 11'9" 18'	6½"	10" 7"
39	51	S.S.	30	21	White sand	Moderate	Luxuriant bracken.	55'	Aspect S. Nearly flat Rather frosty	Was one of the best S.S. areas on Laughton Forest, but the trees are now all dead or dying.	7' 15'6" 20'	9"	4½" 9"
40	2	S.S.	31	20	White sand	Poor	Molinia	70'	Aspect S. Nearly flat Rather frosty.	A very poor crop patchy and irregular.	3' 11'6" 15'	7"	2½" 6"
41	102	S.S.	34	17	Black sand	Poor	Luxuriant grass.	12'	Aspect S. Nearly flat Very frosty.	A very poor irregular crop due to unsuitable soil, frost and insects.	3' 9'6" 12'	6¾"	17" 5"
42	104	S.S.	34	17	Estuarine sand.	Fair	Fine grass Ex arable.	12'	Aspect S. Nearly flat Moderate frost.	A complete failure see C.P. immediately adjacent under Item 12.	2' 5'6" 6'	4"	4" 5"

Item	Cpt. Number	Species	P. Year	Age when Measured	Site Factors					General Conditions of Crop	Height Measurements of Dominants		
					Soil	Drainage	Vegetation	Altitude	Frost/Exposure		Total Av: Height	Mean Annual Ht. Increment	Current Annual Ht. Increment
43	27	J.L.	28	23	Sandy loam	Fair	Bracken	65'	Aspect N.W. Slight slope Moderate frost.	Not good, trees crooked and frequently dying (No heart rot observed).	33'9" 30' 35'	18½"	2 years 18" 19"
44	76	E.L.	29	22	Sandy loam over gravel.	Good	Bracken	95'	Aspect E. Sharp slope Slight frost.	A fair crop looks more promising than the J.L.	29' 25' 35'	16"	22" 26"
45	28	Tsuga	31	20	Sandy loam	Fair	Bracken and bramble.	50'	Aspect W. fair slope Slight frost.	A very fair crop an adjacent stand on Molinia flat land was a complete failure.	30'6" 20' 35'	18"	24" 24"
46	28	Thuya	31	20	Sandy loam	Fair	Bracken and bramble.	50'	Aspect W. fair slope Slight frost.	A fair crop, an adjacent stand on Molinia flat land was a complete failure.	26'9" 20' 30'	16"	22" 20"
47	64	Pop	29	22	White sand	Fair	Luxuriant bracken	60'	Aspect S. Slight slope Slight frost.	Was heavily thinned F.Y.45 but does not appear to respond very patchy on grass areas.	47'6" 40' 50'	26"	30" 32"
48	105	Pop	34	17	Estuarine sand	Fair	Grass ex-arable.	13'	Aspect S. Slight slope Frost moderate.	Generally poor due to dry conditions and unsuitable species.	35' 6' 50'	24"	32" 24"
49	103	Pop	34	17	Estuarine sand	Fair	Grass ex-arable.	13'	Aspect S. Nearly flat Frost moderate	Generally poor, too dry and unsuitable species.	25' 10' 30'	17½"	16" 22"
50	103	Pop	34	17	Warp	Fair	Luxuriant grass ex-arable.	13'	Aspect S. Nearly flat Frost moderate.	Adjacent item 49, best Pop on Laughton Forest.	57' 45' 65'	40"	36" 48"
51	28	Ash	31	20	Sandy loam	Fair	Bracken and bramble.	50'	Aspect W. Fair slope Frost slight.	A moderate crop, an adjacent stand on Molinia flat land was a complete failure.	35' 30' 40'	21"	20" 18"
52	76	Syc	27	24	Sand over marl	Good	Bracken and grass	80'	Aspect N.E. Fair slope Exposed to N.E. winds.	A fair crop but badly forked best on Laughton Forest	24'6" 20' 28'	12¼"	18" 20"
53	82	Grey alder	42	9	Black sand	Poor	Brambles & nettles.	45'	Aspect E. Nearly flat Very frosty.	Crooked but rapid growth.	24' 22' 26'	32"	30" 15"
54	12	C.P.	32	19	White sand	Bad	Heather	70'	Aspect E. Nearly flat Very frosty.	A very poor irregular crop mixed with Ursuline.	8'6" 3'4" 10'	5¼"	21" 18"
55	12	C.P.	32	19	White sand	Bad	Molinia	70'	Aspect E. Nearly flat Very frosty	A poor irregular crop mixed with Ursuline but better than heather on adjacent area (Item 54)	16' 12'6" 18'	10"	18" 19"
56	80	Be	44	8	Deep reddish brown medium sand	Good	Bracken & wood sage	50'	Aspect S. slight slope on crest of ridge. Sheltered by C.P. Not frosty.	Very good growth in gap among P.27 C.P. - site of aeroplane crash. 3+2+1 plants used.	11'6" 9'0" 13'	17½"	28" 24"
57	84	Be	27	24	Deep sand slightly leached.	Good free	Nil (originally grassy heath).	50'	Aspect slight to S. Not frosty.	Roadside belt planted with C.P. Nurses which have been removed in three stages between 1942 and 1951.	28'6" 21' 30'	14"	18" 18"

APPENDIX IV

Statement of Areas Planted by P.years

P. Year	Area planted			Area of S.S. since B.U. 100% (Included in Col.4)	Remarks, Principal species planted etc.
	Conifers	Hws	Total		
(1)	(2)	(3)	(4)	(5)	(6)
26	-	-	-		
27	247.2	8.8	256.0		C.P. planted every year and often mixed with S.P. and S.S. in first 3 years. S.P. only planted during 27 28 29, but N.R. S.P. later years also S.S. planted every year.
28	229.7	13.5	242.2		
29	197.9	13.5	211.4		
30	123.3	4.8	128.1		
31	215.0	13.8	228.8		
32	209.2	6.	215.2		
33	132.5	5.	137.5		
34	87.5	15.	102.5		
35	-	-	-		No land available for planting. Also slump period.
36	5.	-	5.0		
37	-	-	-		
38	-	-	-		
39	14.7	2.	16.7		
40	-	-	-		
41	96.2	9.9	106.1		No S.S. Almost entirely C.P. and S.P. in pure patches.
42	64.4	7.8	72.2		
43	46.0	-	46.0		
44	1.5	1.5	3.0		
45	-	-	-		
46	52.5	22.0	74.5		No C.P. following Tortrix scare in 45. Some beech in 46. Sowing to max possible C.P.
47	72.1	-	72.1		
48	132.5	-	132.5	2.0	
49	-	-	-	80.6	
50	5.7	-	5.7	59.4	
51	5.0	-	5.0	74.0	
Total	1937.9	123.6	2061.5	216.0	

Notes (1) There are no acquired plantations at Laughton.
(2) Areas of failed S.S. which have been cleared and re-planted from 1948 to 1951 are still shown under the original P. year and the replanting is officially regarded as Beating Up.
(3) Areas destroyed by fire have been deducted from the years planting figures.

APPENDIX V

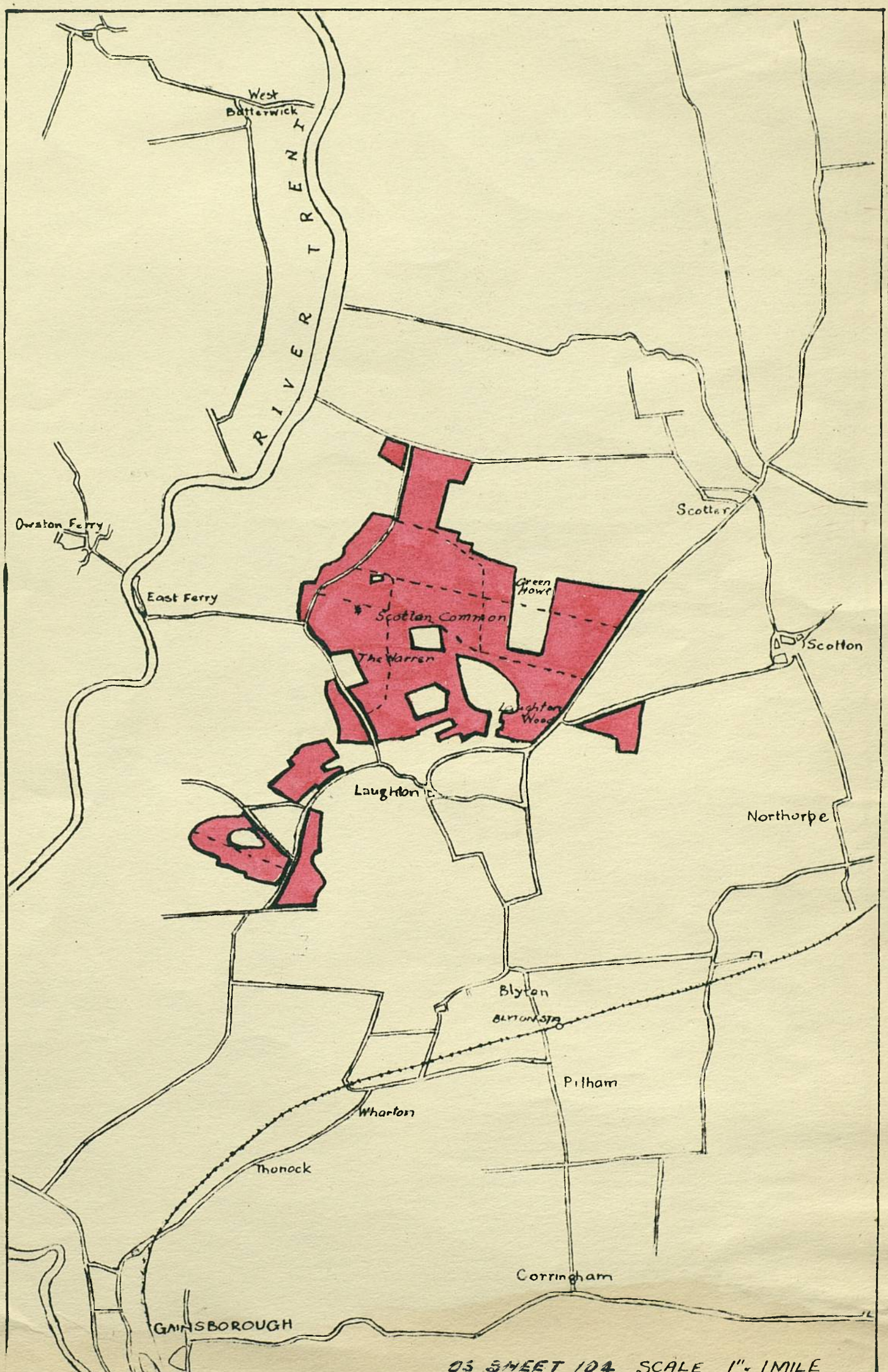
Compartment Area Statement

(With cross reference, new to old compartment numbers)

OLD Cpt. No.	NEW Cpt. No.	NEW Cpt. Gross Area	OLD Cpt. No.	NEW Cpt. No.	NEW Cpt. Gross Area	OLD Cpt. No.	NEW Cpt. No.	NEW Cpt. Gross Area
44	1	18.1	40	41	14.3	71	81	20.2
44	2	19.3	23	42	18.6	72	82	19.0
45	3	18.4	30	43	19.6	65	83	24.0
45	4	18.2	23	44	15.1	17	84	22.0
43	5	23.0	30	45	18.5	17	85	8.2
26	6	24.1	39	46	14.9	18	86	19.6
42	7	19.0	52	47	14.7	18	87	20.1
46	8	15.2	51	48	14.8	33	88	29.5
46	9	16.3	51	49	14.6	36	89	14.0
42	10	17.4	52	50	13.1	36	90	9.7
27	11	10.7	39	51	13.7	57	91	16.8
27	12	15.0	78	52	24.6	57	92	11.0
25	13	17.0	79	53	20.4	35	93	13.6
25	14	14.2	77	54	21.1	35	94	15.0
24	15	20.8	76	55	23.6	34	95	15.2
24	16	17.6	76	56	19.2	34	96	24.0
28	17	14.8	75	57	15.1	16	97	19.0
29	18	14.7	75	58	14.5	16	98	9.0
41	19	19.1	74	59	13.7	14	99	22.9
48	20	11.2	74	60	18.6	15	100	17.9
47	21	15.4	73	61	17.4	15	101	21.1
47	22	15.0	73	62	11.2	70	102	18.4
48	23	11.0	22	63	22.2	69	103	13.9
29	24	20.8	31	64	14.0	68	104	21.4
40	25	15.7	31	65	14.4	67	105	8.0
49	26	11.0	38	66	12.0	66	106	25.5
50	27	14.1	38	67	19.0	4	107	13.1
64	28	14.0	53	68	24.0	4	108	16.6
64	29	13.6	54	69	11.0	5	109	23.9
63	30	16.1	55	70	18.1	6	110	18.1
63	31	22.5	55	71	23.2	6	111	12.8
62	32	13.6	53	72	16.0	12,13	112	23.4
62	33	19.3	56	73	14.0	12	113	21.2
59	34	26.6	37	74	11.9	11	114	23.0
58	35	16.	37	75	17.1	10	115	25.1
58	36	15.4	32	76	22.2	9	116	19.6
60	37	23.4	32	77	13.3	8	117	30.0
61	38	15.1	19	78	27.3	7	118	11.0
50	39	17.0	21	79	27.0	7	119	14.9
49	40	13.0	20	80	27.0			

Laughton

LAUGHTON FOREST



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