FDM COWAL

COWAL REVISITED

by

J B McCreath

April 1988

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REPORT ON

CHANGES IN LAND USE, 1950-1985

To

THE HIGHLANDS AND ISLANDS DEVELOPMENT BOARD

By

J B MCCREATH

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FOREWORD BY HIDB

In the autumn of 1985, the Highlands and Islands Development Board invited John B McCreath, newly retired, to undertake an agricultural re-survey of the five western hill farming parishes of the Cowal Peninsula in Argyll, being an area that he had surveyed in great detail for the West of Scotland Agricultural College more than 30 years previously between the years 1951 and 1953.

The survey report of the early 1950's stated, inter alia, in its conclusions that the small to medium sized farms that were characteristic of the area were under threat from poor productivity and profitability and lack of reinvestment despite State aid at 50% for more rehabilitation costs. An increasing rate of afforestation in the area was meantime pointing to the need to try to integrate sheep farming and afforestation.

Thirty-five years on, and with the rate of afforestation in mid-Argyll and Cowal having in fact accelerated in the intervening years, an opportunity to have the area re-surveyed happily presented itself, and the following report by John McCreath was completed in the autumn of 1986.

The Board, interested to plot the expansion of forestry plantings in the survey area over a similar time-span, undertook a desk study using official forestry data, to augment that already provided by the survey.

The farm re-survey, painstakingly executed as a full census of all farms still remaining in the original survey area, provides an accurate and fascinating insight into the major changes in structure, tenure, productivity, employment and marketing arrangements that occurred over a 35 year timespan. The parallel account of afforestation over the period, less detailed, provides equally interesting data, especially in relation to forestry employment creation, and indeed does much to mitigate the worrying scenario of an ever-reducing agriculturally sustained population.

The Cowal peninsula is now one of the most heavily afforested parts of Scotland with forest cover in the five parishes surveyed approaching 40%. The changes in agricultural production have been far reaching, although not all of these are a consequence of afforestation. Rather forestry development has taken place at a time when hill farming was in any case undergoing a period of radical improvement.

The survey attempted to cover all the units surveyed in the 1950s. In the event, restructuring and sale of land for forestry had reduced the original 41 farms to 23 and the original 36,000 hectares covered by these farms to only 21,000 hectares between 1950 and 1985. Tenanted units, once in the majority and comprising three-quarters of all the farms surveyed, now only account for seven out of the remaining 23.

There has also been a drop in the male workforce employed in farming which, including occupiers, have fallen from 102 to 41, a decline of 60%. This has been accompanied by a corresponding increase in the efficiency of labour use both with regard to the area per employee and the numbers of livestock per employee.

With much of the hill land being transferred to forestry, there has been a corresponding change in livestock numbers. Ewe numbers have declined by 32% but cow numbers have increased by 38%. This simple summary of change over 35 years, however, masks, as the Report also illustrates, intervening increases and declines of even greater magnitude. Breeds of cattle have changed as farmers have followed recent trends towards leaner Continental types and sheep breeds have changed towards crosses producing heavier lambs. One particularly noticeable factor is the increase in livestock productivity, as nearly 1,000 more lambs were sold in 1985 than in 1952 in spite of there being over 8,000 fewer ewes. In the case of cattle, herd size per farm has trebled and output further increased by selling weaned calves rather than stores of two or three years of age.

The Board's review of forestry in the survey area had hoped to corroborate land transfers recorded on the surveyed farms but in practice this was not possible. However, it was possible to obtain a reasonable picture of the build-up of the Cowal forest although the boundaries of the present forest management units do not coincide with the five parishes within which the surveyed farms lie.

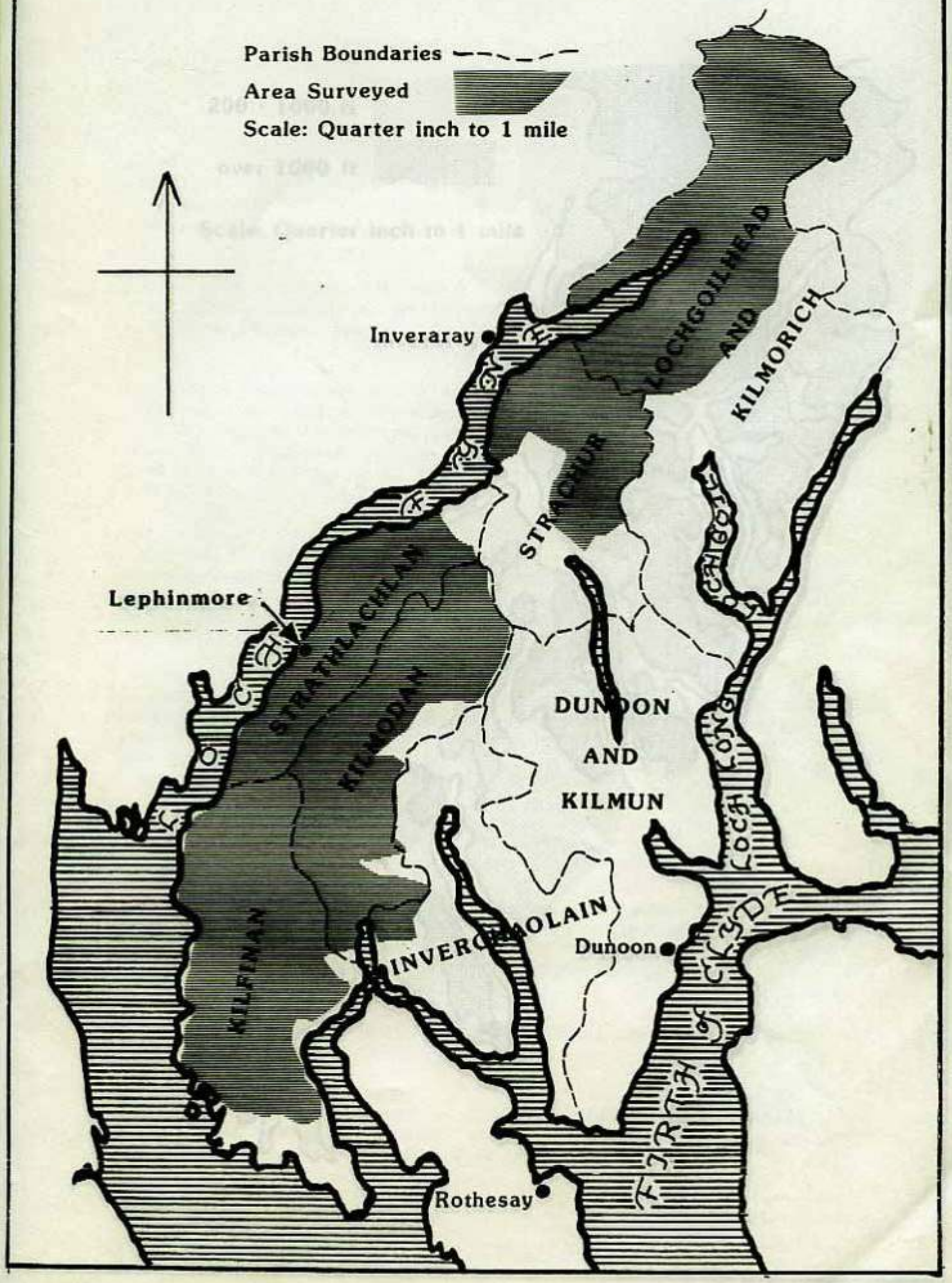
The area of plantations has trebled since the early 1950s from 12,000 to over 36,000 hectares, with Forestry Commission woodlands predominating in the ratio of about 2:1. About 220 people are employed in forestry but excluding the sawmills and processing.

One of the key questions concerning the transfer of land from agriculture to forestry is whether forestry employs as many people as the original farms. The survey figures indicate that about 30 farming jobs were lost as a direct consequence of transfers to forestry. From the figures available, it appears that this number has been more than made up for by forestry since it is estimated that the area planted on the survey farms (14,500 hectares) now supports about 52 jobs. The people in those jobs though may not now be living in the survey area and the agricultural workers displaced by forestry may not of course have taken up jobs in forestry.

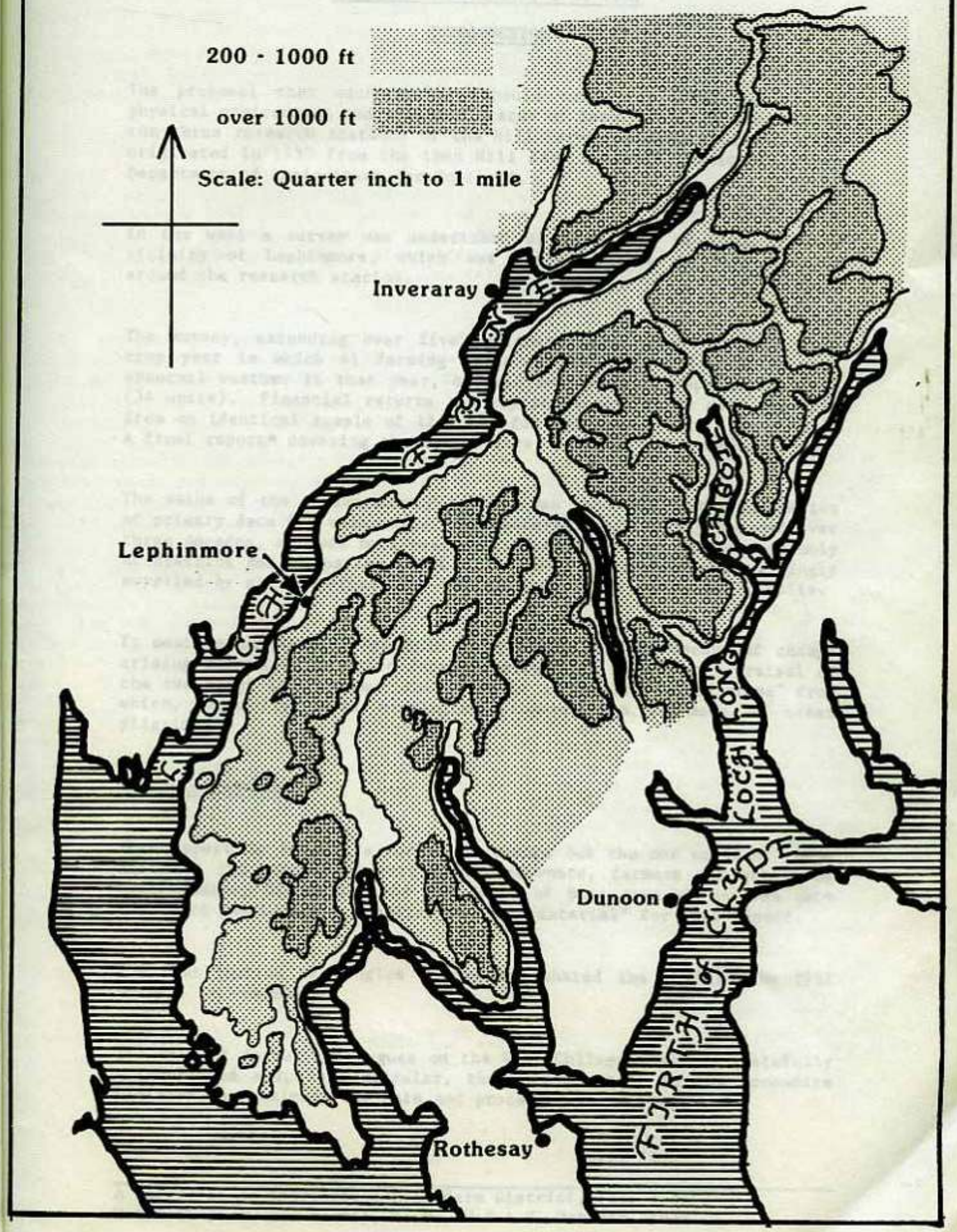
The survey, therefore, has allowed a unique sequential view of land use change of over a period of more than a generation. The results suggest that, while hill farming has declined in numbers and extent, a remarkable degree of technical improvement has kept this highly vulnerable sector of farming in business. It also suggests that, in employment terms, forestry may well have maintained the level of population in the area. Although the population may now be more concentrated in towns and villages, there seems little doubt that without forestry the loss of jobs in hill farming arising from technical and economic change alone would have brought about a significant decline in the overall population of the area.

HIDB
April 1988

THE SURVEYED AREA



APPROXIMATE CONTOURS



THE SURVEY AREA

The Cowal district of Argyllshire is a peninsula with a long and indented sea boundary comprised of Lock Fyne, the Kyles of Bute, the Firth of Clyde and Loch Long, (see Map 1). The narrow "neck" of land between the head of Loch Long and the head of Loch Fyne almost coincides with the northern boundary of Cowal. With regionalisation, it became part of Argyll and Bute District within Strathclyde Region.

The district of Cowal comprises seven parishes: - Lochgoilhead, Strachur, Strathlachlan, Kilfinan, Kilmodan, Inverchaolain and Dunoon. Of these, the first five are closer to Lephinmore and it was decided that the 1950 survey should not extend beyond those parishes. Furthermore, the most southerly part of Kilfinan parish consists of farms either with considerable lowground or with rough land lying at low altitude and much of this area was excluded.

Cowal contains a considerable amount of land over 300 metres particularly in the northern parishes of Lochgoilhead and Strachur. (see Map 2). The former is by far the most rugged with several peaks not far short of 920 metres and with an annual rainfall in excess of 90 inches.

Southwards along the western side of the peninsula, altitude and rainfall decline. Here a figure of 60"-70" per annum would be a typical average. Eastwards over the watershed, lies Glendaruel in the Parish of Kilmodan. Prior to afforestation, this was one of the most favoured hill farming glens not only in Cowal but in Argyllshire.

For such a relatively small area, Cowal has a great diversity of scenery and climate. It has been described as "Scotland in miniature" and the mild but beautiful area on the north shore of the Kyles of Bute as the "Scottish Riviera".

Types of Farming

As hill farming or stock raising predominated, there was no great difficulty over selection. In the initial year of the survey (1950-51) detailed information on land tenure, production and marketing was willingly made available for 41 farming units, comprising 59 per cent of the farming area and 72 per cent of the ewe stocks in the five parishes. (The approximate area covered is shown in Map 1).

The basic aim of the present survey was to trace and measure the changes which had taken place on the same land after an interval of 35 years.

	1950	1985
Hill Sheep Farms	25	13
Upland Stock Farms	15	10
Dairy with Moor Flock	1	-
Total Units	41	23

In Kilfinan parish one or two farms would have been in the "Stock Rearing with Arable" category in the then, DOAS classification. There have been several changes of classification in the interval but in EC jargon most of the hill farms remaining would be in the "LFA Type 1, Mainly Sheep" group.

As detailed in the land tenure section, this fall in the number of farming units was the net result of several interacting factors, predominantly stemming from afforestation.

In summary:-

	No of Units at 1985
Unchanged	3
Enlarged	2
Reduced	11
Merged	7 (14)
Gone	- (11)
	23 (41)

That only three of the original units remained unaffected was one of the most unexpected facts to emerge. Enlargement came through renting back of neighbouring "tops" after planting.

Eleven units were reduced in size through the partial sale of hillground.

The line between the merging of the residual lowground and complete disappearance is fairly narrow but, in total, eighteen of the original units have gone.

This complex picture has necessitated the use of the rather sterile term unit rather than farm throughout this report.

LAND TENURE

In any study of land use, land tenure is the obvious starting point. A feature of the first survey was the small proportion of land (7%) which was owner-occupied. In fact this was less than land owned by public bodies (10%), almost exclusively by the Forestry Commission. The remaining 83% was owned by 16 estates, varying widely both in size and in number of farms. In acreage terms, 56% was let and 44% was "in hand". The main reason however, for the high proportion of unlet land was that one of the largest estates in Argyll lay within the survey area and was, at that time, all "in hand" and accounted for more than half of this category.

The following table summarises the complex changes which have occurred in the last 35 years.

Table 1

LAND TENURE POSITION: 1950 and 1985

	1950 June			1985			Change in:		
	No of Units	Area (ha)	%	No of Units	Area (ha)	%	No of Units	Area (ha)	%
Tenanted	29	18,856	53	7	7,626	36	(-)22	(-)11,230	(-) 60
Owner-Occupied	4	2,505	7	10	5,873	28	(+) 6	(+) 3,368	(+)134
Estate Farms in Hand	8	13,013	36	6	7,669	36	(-) 2	(-) 5,344	(-) 41
For.Comm.in Hand*	1	1,412	4	-	-	-	(-) 1	(-) 1,412	(-)100
Total	42 ϕ	35,786	100	23	21,168	100	(-)19	(-)14,618	(-) 41%

*Managed as well as owned

ϕ One unit partly tenanted and partly owned

The number of tenancies has fallen by 22 or 76%. Whereas in 1950, such units accounted for over one-half of the survey area, by 1985 the proportion was down to one-third of the much reduced farming area.

By 1985, owner-occupancy had become the largest group in terms of number of farms but still some 8 per cent short in terms of area.

In 1985 the area held by estate farms was virtually the same as that farmed by tenants.

It must be stressed, however, that the figures in Table 1 are the net result of change over a time span of 35 years. Inter-group movement included:

Estate tenants -----> owner-occupiers
Forestry Commission tenants ----> owner-occupiers
Estates taking farms in hand and, after afforestation, running them as single units.
Merger of units by owners after - and funded by - partial sale:
Letting of farms: only one case - a large unit let on a partnership basis.

Nevertheless, three broad strands in the loom of change stand out:

1) The landlord/tenant system has been heavily eroded.

2) Owner-occupancy has increased significantly.

3) There has been a transfer of some 14,600 ha (36,100 acres) from the agricultural to the forestry sector.

THE FARMING STRUCTURE

Clearly a shift of 41% to forestry must create considerable change. Such changes are measured in the following table.

Table 2

UNITS, LAND AND LIVESTOCK IN THE SURVEY AREA

Parish		No of Units	Total Area(ha)	No of Cows	No of Ewes
Lochgoil/ head	1951	3	10,184	112	8,584
	1985	2	8,318	20	5,000
Change		(-) 1	(-) 1,866	(-) 92	(-) 3,584
% Change		(-)33	(-) 18	(-) 82	(-) 42%
Strachur	1951	4	2,398	33	2,457
	1985	3	1,976	20	2,311
Change		(-) 1	(-) 422	(-) 13	(-) 146
% Change		(-)25	(-) 18	(-) 39	(-) 6%
Strath/ Lachlan	1951	5	2,959	46	1,924
	1985	3	1,848	78	1,805
Change		(-) 2	(-) 1,111	(+) 32	(-) 119
% Change		(-)40	(-) 38	(+) 70	(-) 6%
Kilfinan	1951	17	10,835	221	7,089
	1985	7	3,723	309	4,200
Change		(-)10	(-) 7,112	(+) 88	(-)2,889
% Change		(-) 59	(-) 66	(+) 40	(-) 41%
Kilmodan	1951	12	9,410	144	6,532
	1985	8	5,303	338	4,711
Change		(-) 4	(-) 4,107	(+)194	(-) 1,821
% Change		(-)33	(-) 44	(+)135	(-) 28%
TOTAL	1951	41	35,786	556	26,586
	1985	23	21,168	765	18,027
Change		(-)18	(-) 14,618	(+)209	(-) 8,559
% Change		(-)44	(-) 41	(+) 38	(-) 32%

This is not the easiest of tables to summarise but the following points may help.

The parish of **Kilfinan** had the most dramatic fall, both in terms of farms and land with the latter reduced by two-thirds. In common with the other parishes, ewe numbers were down but proportionately less than the fall in area, indicating an improvement in stock carrying capacity. (Husbandry changes are considered in a later section). Back in 1951 this parish had by far the highest hill cow population. At 1985 cow numbers were 40% above the 1951 level despite the loss of 10 farms in the survey area.

In terms of land and ewe numbers **Kilmodan** parish followed the same general pattern but to a lesser degree. Hill cow numbers at 1985 showed an increase of 194 head thereby relegating Kilfinan to second place.

The figures for **Strachur** and **Strathlachlan** parishes both reflect a much lower order of change and are very similar in terms of units and ewe numbers. Cattle numbers are too small to provide valid comparisons.

In the case of the **Lochgoilhead** units, the results are atypical. Considerable tenure changes have taken place over the 35 years on this the most rugged terrain in Cowal. Ewe numbers are currently being re-built after a period of transition. Excluding these figures, the results for the four other parishes as a group were:- reduction in area, 50 per cent; reduction in ewe numbers, 28 per cent.

In the survey area as a whole, by 1985 there were 44 per cent fewer units on 41 per cent less land; ewe numbers were down by 32 per cent but cow numbers up by 38 per cent.

These results, however, arise from two measurements in time and do not constitute a trend. This aspect is considered in a later section.

AFFORESTATION

In 1950 afforestation had not proceeded so far in the survey locality as in the other two parishes particularly Dunoon and Kilmun where there has been a long and notable forestry tradition.

At the time of the first survey, the Forestry Commission owned considerable tracts of land within the area but on only one of the farms had planting been completed but leaving an agricultural unit. By 1953, there were four such units. At that time it was clear that "some reduction in the number of farms" would take place in the future. What could not be foreseen was the extent of afforestation in the span of 35 years. The following tables summarise a fairly complex picture.

Table 3

AREA RESUMED OR ACQUIRED (ha) 1951-1985

Parish	1951-60	1961-70	1971-80	1981-85	Total(ha)	%
Lochgoilhead	-	153	468	1246	1867	13
Strachur	-	-	263	121	384	3
Strathlachlan	-	5	1077	-	1022	7
Kilfinan	400	2765	3030	960	7155	49
Kilmodan	1435	557	847	1157	3996*	28
Survey Total	1835	3480	5685	3484	14484	100%
Indices	100	190	310	190		

*Net of 200ha rented back.

Farms within the survey area in Kilfinan parish contributed virtually half of the total with Kilmodan yielding over a quarter. Bearing in mind that the most recent figures are for half a decade, it is evident that afforestation has been proceeding at a considerable rate.

Figures of areas resumed or purchased are as stated by the farmers interviewed. These were used except in a few cases where the difference between the 1950 and 1985 June returns had to be taken. In the event, the fit between the agricultural and forestry figures was very close although self-cancelling errors may have arisen.

Table 4

AREA RESUMED OR ACQUIRED (ha)

By Sectors

Parish	Forestry Commission	Private Sector	Estate Planting	
Lochgoilhead	-	1359	508	
Strachur	20	364	-	
Strathlachlan	1068	-	14	
Kilfinan	5205	1333	617	
Kilmodan	2312*	1659	25	
TOTAL	8605	4715	1164	14484ha
	59%	33%	8%	100%

* Net of 200 ha rented back

Although private forestry groups were not active in the area until the 1970's, they would appear to manage around one third of the plantations. The low figures of planting by estates for their own production is disappointing and mirrors perhaps the lack of enthusiasm amongst landowners and farmers generally for embarking on a planting programme.

FARM STAFFING AND POWER

Although the Cowal Peninsula cannot now be described as remote - thanks to a road system very much improved since the early fifties -, the bulk of the population is concentrated in the coastal fringe of the parish of Dunoon and Kilmun. In the five parishes included in the survey the rural population in 1951 was almost wholly dependent on farming.

Table 5

TOTAL LABOUR FORCE (inc farmers, wives and managers)

	1951	1985	Fall	%Fall
Male	102	41	61	61
Female	28*	8*	20*	71
Total Labour	130	49	81	62%
No of Units	41	23	18	44

*including wives stated as "doing considerable farm work" (21 and 8 respectively).

As well as the direct loss through the sale of farms, it is clear that there has been a shrinkage in the labour force on the remainder. In 1951 exactly half the staff consisted of farmers and their families.

Table 6

CHANGES IN THE MALE WORK FORCE

	Family		Hired	
	1951	1985	1951	1985
Farmers	30	14	-	-
Partners	3	1	-	-
Managers	-	-	7	5
Workers	11	8	51	13
Total	44	23	58	18

In 1985 farmers and managers combined are four short of the number of units (23). This comes about through certain properties having land outwith the original survey survey area, thus giving rise to estimated shares.

On a comparable basis with 1951, to all intents and purposes the number of farmers has been halved. The heaviest fall was that of hired workers (including managers) down by 40 or 69 per cent.

One of the main conclusions of the original study was the importance of the "family farm" in the district. Although their numbers have been greatly reduced, at least the proportion of family workers, including farmers, in the total labour force has increased; 56 per cent as against 43 per cent in 1951. Whether this will slow down or halt the swing to forestry in the future remains to be seen. On past evidence it would seem doubtful.

Table 7

CHANGE IN THE TOTAL MALE LABOUR FORCE 1951-1985

By Parishes

Parish	Fall	% Fall
Lochgoilhead	20	77
Strachur	5½	55
Strathlachlan	2½	33
Kilfinan	22	65
Kilmodan	11	45
Total	61	61%

An examination of the primary data for those farms which have gone entirely or which, after planting have been merged with existing units, indicates that approximately half the fall in the total labour force was due to afforestation and half to the decline in the agricultural working population.

Over the period under review the agricultural work force has been shrinking throughout Scotland. In any attempt to compare the Cowal data with national labour statistics, it must be noted that the above figures include farmers.

Labour Usage

Given the above, it is clear that considerable gains in labour efficiency must have taken place.

Table 8

LABOUR USAGE

Survey Averages	1985	1951	Gain	%
Farm Area per Man (ha)	516	351	165	47
Ewes per Man	440	261	179	69

Note Farmers are included in both years.

There was a wide variation in results at parish level. Taking ewe numbers as the better guide, the range was a gain of 503 ewes per man in Lochgoilhead to 82 in Kilmodan.

In 1985 the number of ewes expressed per man in the two parishes where cattle and cropping are relatively more important, were virtually the same: Kilfinan, 350; Kilmodan, 349. The equivalent figures for Strathlachlan, Strachur and Lochgoilhead were 361, 714 and 833 respectively.

The foregoing analysis cannot disguise the fact that there are now 61 fewer men working in the area. They and their families represent a considerable fall in the rural population over the past 34 years. One would submit that the crucial question in the swing from sheep to trees is not the effect on production but on the fragile population balance in the hill and upland areas. Whether employment in forestry has as yet restored the balance* is debateable; that the vast majority of such employees do not live in the area is certain!

Field Power

The interval between the two surveys has seen the demise of the horse. It may be of historical interest that in 1951 there were 46 horses and 26 tractors on 39 farms in the area. Fourteen units were wholly dependent on "horse power" while 12 relied on tractors. The transition to mechanical power was well underway as evidenced by 13 units which had both.

*Several refinements were attempted to separate the direct and indirect effects of afforestation from the natural decline in the agricultural population which would have occurred in any case over a period of 35 years. All indicated that the balance by 1985 would have been of the order of 30-35 men.

MAJOR CHANGES IN HUSBANDRY AND PRACTICE

CROPPING

In the past 35 years the major change has been the significant reduction in the proportion of the lowground under the plough. In 1950 out of a sample of 40 units all but one had ploughland crops.

	June 1950	June 1985*
Number of Units with:-	(40)	(23)
Oats	35	2
Barley	-	4
Turnips	23	-
Finishing Crops	19	9

Note 38 units also grew small areas of potatoes in 1950.

At the time of the survey, barley growing lay in the future. It was not until the mid-seventies that barley returns began to appear in the Parish Statistics and around the early eighties before it outnumbered oats and then only in the parishes of Kilfinan and Kilmodan.

In the survey area in 1985 the land under oats was only 6ha in total with barley at 29ha. No cereals were grown in the other three parishes. Turnips and swedes have all but disappeared.

The laying aside of the plough has meant a corresponding increase in the grassland area. None of the farms in 1950 grew silage and only one in 1951. The subsequent uptake of silage conservation has seen a swing away from an all-hay policy (38 units in 1950).

The position in 1985 was:-

Hay	10 units	94ha
Silage	8 "	169ha

On eight units (approximately one third of the sample) there was no cropping other than grazing.

In 1950 "cropped acres" - ploughland **plus** hay - constituted 42 per cent of the lowground. In 1985 the equivalent figure, including silage, was only 25 per cent.

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*The data in 1985 relate to the intention at June, not necessarily what was salvaged after the worst harvest for many years.

CATTLE

Relative Importance of Cattle and Sheep

With the transfer of land to forestry being confined almost exclusively to rough grazings, an increase in cattle numbers relative to sheep would be a reasonable expectation. The following table attempts to measure the degree of change. It is restricted to those farms which carried both and relates to the position at June.

Table 9

RELATIVE PROPORTIONS OF CATTLE AND SHEEP

No of Ewes per Cattle Beast	1950 No of Units	%	1985 No of Units	%
Up to 10 ewes	12	30	13	72
11 - 20	16	40	2	11
21 - 40	6	15	1	6
41 - 80	3)		2	11
81 - 160	1)	15	-	
161 - 300	2)		-	
Total	40	100%	18	100%
Cattle	1528		1599	

In 1985 the average number of ewes carried per cattle beast was 8; rising to 11 when the five sheep-only units are included. The equivalent figure in 1950 was 17 ewes.

The cattle population is not dissimilar in either year but it is being carried on fewer than half the farms in 1985. The increase in herd size has been accompanied by a further concentration in two parishes: Kilfinan and Kilmodan (see Table 2).

The Breeds

Thirty five years is a relatively short time in cattle breeding terms but the changes have been several and total.

Table 10

NUMBER AND BREED OF BULLS

	1950	%		1985	%
Ayrshire	10)		Simmental	6½)	
Dairy Shorthorn	1)	38	Charollais	6)	73
Jersey	1)		Limousin	3½)	
Aberdeen Angus	10	31	Hereford	5	23
Highland	4)		Aberdeen Angus	1	4
Galloway	3)	31		-	
Shorthorn	3)			-	
	32	100%		22	100%

Several points stand out in the table:-

1) In 1950 the high proportion of dairy blood with the Ayrshire equal in popularity to the Aberdeen Angus.

2) The virtual disappearance by 1985 of four of Scotland's traditional beef breeds.

3) The recent and growing popularity of Continental bulls.

4) In the life span of the survey the Hereford has waxed and waned but is still popular on the dam side.

Table 11

BREED OF COWS - BY HERDS

	1950	%		1985	%
Ayrshire	13)		Cross Hereford	5)	
Cross-Ayrshire	8)	53	Hereford-Friesian	4)	47
Cross-Shorthorn	7	17	Blue Grey	4	21
Highland	3)		Cross-Aberdeen Angus	2	11
Cross-Highland	3)		Cross-Shorthorn	1)	
Cross-Aberdeen Angus	4)	30	Cross Highland	1)	21
Galloway	1)		Simmental/Luing Cross	1)	
Cross-Galloway Herds	1)		Irish Black	1	
	40	100%		19	100%

Type of Product

a) **Nov.1950** Excluding four units keeping only a couple of dairy cows for household and lamb milk, there were 36 regular breeding herds of which 19 were producing stores of a beef type; 10 were producing both dairy and beef stores and 7 were pure dairy cattle. Only one unit - 6 cows - was retailing milk.

At that time the long established trade in dairy heifers from Cowal to Kintyre and to Renfrewshire was starting to diminish. In the following table, figures from a repeat survey in 1952 are shown alongside those available for 1985.

Table 12

CATTLE DISPOSAL BY CLASS OF STOCK

	1952		1985
	% of Total Sales	No of Units	No of Units
Dairy Bulled & Calving Heifers	9	4	-
Weaned Calves	13	2	14
Yearling Stores	13	1	5
Older Stores	54	21	-
Others*	11	16	NA
	100%	21	19

*Cows and young calves

b) **1985** Although detailed sales information was not sought, the swing to selling beef cattle at a younger age is strongly evident; almost 75% of the units selling weaned calves as against only 10% back in 1952.

Marketing

In contrast to the more diffuse pattern in the early fifties, marketing in recent years is more clear cut. Apart from one private sale, all the weaned calves went to Dalmally market. In the case of stores, Stirling was the main centre.

In 1952 over 90% of the beef cattle were sold within Argyll with around 50% passing through the two local markets at Strachur and Balliemore. Those special one-day sales in the midst of the survey area are now long gone. Dalmally was numerically the next most important market followed by Oban and Stirling. For dairy heifers, Paisley and Stirling were the main markets.

Calving Performance

In 1951, one of the poorest seasons, the average calving percentage was 75; in 1952, 80% and 84% in 1953. The corresponding figure for 1985 was 94%. Although these figures relate only to calves **born**, the gap between them is wide enough to suggest a significant improvement in performance compared to the past.

Changes in Husbandry Practice

The biggest change was in the method of over-wintering. Whereas in 1950-51, 78% of the **herds** were in-wintered, only 22% were housed in 1984-85.

Another major difference was in herd replacement policy. In the early fifties only 27% of the herds were maintained by purchase. In 1984-85 the equivalent figures was 78%. The data on breeds goes some of the way in explaining this marked swing away from home-breeding.

A comparison of time of calving showed that spring calving is less popular today, although still favoured by the majority of herdmasters. (56% as against 75% in 1951).

The Overall Position

As a matter of record, the **average** herd size at June 1985 was as follows:-

	No of Herds	Av. No of Cows
Lochgoilhead	1	20
Strachur	2	10
Strathlachlan	2	39
Kilfinan	6	52
Kilmodan	7	48
Survey Area, 1985	18	45
Survey Area, 1951	(36)	(15)

In view of the small numbers involved, comparisons at parish level are not advised. At area level, however, some interesting points emerge. In 1985 the number of herds was down by one half but the average size of herd had trebled.

In the interval husbandry practices have altered markedly as has the pattern of subsidy support. The three factors, discussed earlier have contributed to a much lower followers/cow ratio than in the past:-

1) selling predominantly as weaned calves

2) the switch from rearing dairy heifers

and
3) buying rather than rearing herd replacements.

In the present survey - but a fraction in time and resources of the original - one can only erect broad signposts. A comparison of the official statistics for the three (entire) parishes confirms that the pattern of production is markedly different from that of the early fifties.

Table 13

Number of Followers* per Cow, at June, 1950 and 1985

	Strathlachlan	Kilfinan	Kilmodan
1950	2.14	1.77	3.51
1985	1.29	1.29	1.20

*incl. calves at foot

In Cowal, as elsewhere in Scotland, hill cattle production in recent years is characterised by a faster annual turnover of younger and lighter cattle. With the pattern of subsidy support focused on the cow, it could hardly be otherwise.

SHEEP

The Breeds

Back in the fifties the paramount breed was the Blackface with only one out of 41 farms running a pure bred S.C. Cheviot flock. In every case the sheep were run as hill flocks.

In 1985 the Blackface was still the major breed with all 23 units having Blackface ewes but there were only 10 (or 43%) producing nothing but pure Blackface lambs.

On the remainder the position ranged from a small sub-flock being crossed through to a dominant flock - often Greyface ewes - running with a terminal sire, normally the Suffolk.

In Table 14 ewes have been grouped according to subsidy criteria ie **hill ewes** are those getting the higher rate of HLCA; **upland ewes**, the lower rate.

In total there were:-

	1985	
Hill ewes	15724	87
Upland ewes	2303	13
Total	18027	100%

Table 14

SOME PER UNIT AVERAGES at mating, 1984

Parish	No of Units	No of Hill Ewes	No of Upland Ewes	No of Total Ewes	Ha of Rough Grazing	Winter Stock Carry*
Lochgoilhead	2	2500	125	2625	3966	1.51
Strachur	3	705	65	770	637	0.83
Strathlachlan	3	568	33	601	598	1.00
Kilfinan	7	441	159	600	459	0.76
Kilmodan	8	509	80	589	620	1.05
Survey Av.	23	684	100	784	861	1.10*(ha of R.G.per ewe)
Survey Av. 1951	36	657	-	657	854	1.30

Limiting the comparison to the area, it can be seen that the average flock size was up by around 6½ score of which 5 were upland ewes. In a situation where only rough grazings are being sold for forestry with the residual lowground being absorbed into the units remaining, an increase in lowground/upland ewes is not unexpected.

Table 15

LAMBING PERFORMANCE AND EWE DEATH RATES

Lamb Crop Year, 1985

	Lambing Marking Percentage			Ewe Death Rate
	Hill Ewes	Upland Ewes	Overall	Overall%
Lochgoilhead	79	168	83	9.6
Strachur	85	148	90	6.2
Strathlachlan	94	115	95	6.0
Kilfinan	82	118	92	6.5
Kilmodan	91	154	99	6.0
Survey Av. 1985	85	136	92	7.1
Survey Av. 1952	70	-	70	7.4

The 1950-51 season, one of the poorest for many years, was so untypical-average weaning under 50% - that a repeat survey was done for the 1952 lamb crop year. Comparisons in this section are based on that year.

The 1985 season was a better year for numbers than 1984 but not exceptional. The evidence for the early years of the decade of the fifties indicates that a 70% lamb crop was fairly typical. However, the difference of 13 fewer units in 1985 remains. Excluding those units which had been radically altered in structure after afforestation, comparable lamb marking data was available from 16 farms in both years:-

	1952	1985
10 units producing only B F Lambs	73%	85%
6 units producing both B F and cross lambs*	72%	92%

* in 1985

The evidence points to an improvement in lambing performance of 12 percentage points on hill farms, with the heavier lamb crops from the upland/lowground sub-flocks pulling the overall average up a further 8 points. A **district** average for Cowal of 92% was unheard of back in the fifties.

Changes in Husbandry Practice

This significant improvement in lamb output **per unit** has arisen from the uptake of advances in scientific and veterinary knowledge over the period under review.

Feeding

The change in attitude to feeding of hill ewes is predominant. The fact that in 51 pages of the original report, not one paragraph was devoted to this topic, says it all!

In the winter of 1984-85, 15 flocks of hills ewes had access to feed blocks, four were on concentrates and/or hay and four received no supplementary feed. On one farm, 200 of the leanest ewes were housed and lambed inside.

All 12 flocks on the lower ground received concentrate feeding. Here, three flocks were brought into sheds some weeks before lambing.

Other Major Changes

These can best be handled in tabular form.

Table 16

FLOCK MANAGEMENT, 1985 LAMB CROP YEAR

Number of Units

	Tupping in Hill Parks*	Lambing ditto	Provision for Twins	Sonar Scanning
Wholly	11	13	17	4
Partial	2	4	1	2
Not	10	6	5	17
	23	23	23	23

* including on lowground

The old custom of tupping and lambing on the open hill has declined markedly. The days when too many twins were not wanted, have passed away. Sonar scanning was tried for the first time in 1985 by six farmers and several others were intending to scan the 1986 crop.

Surprisingly, weighing of ewes prior to mating was not done on any of the 23 farms and condition scoring-in the formal sense - was carried out on only one. In the absence of weighing, none of the farmers could be said to be practising an integrated two-pasture system although several were employing many of the components of the technique. The breakthrough on the nutritional needs of the hill ewe, the year round, lies at the heart of the new management systems. From this, other techniques and benefits have flowed.

Marketing

Only those with long memories will recall that in 1951, selling of all fat stock was still under the control of the then Ministry of Food with official payment classification or grades; eg LRI for 1st grade lambs and ERI for ewes. Fat lambs from the area were graded at Glasgow Market.

This centre also dominated the trade in store lambs and cast ewes.

Table 17

MAIN MARKETS FOR SHEEP, 1951 and 1985

	(1)1951			(2)1985	
Market	**Store Lambs**	**Cast Ewes**		**Store Lambs**	**Cast Ewes**
	%	%		%	%
Glasgow	72	53	Stirling	78	65
Balliemore	14	9	Dalmally	13	9
Lanark	7	3	Paisley	-	17
Dalmally	3	1	Private*	9	9
Stirling	-	2		100%	100%
Ayr	-	26			
Private Sale	4	6			
	100%	100%			

*inc. transfer to lowground farms (1 case)

(1) Based on the actual **numbers** sold in 1951.

(2) Based on the first choice of 23 consignors in 1985.

Although the latter is not so satisfactory, as some sheep would be sold at both Stirling and Dalmally, the table illustrates the dramatic change in the pattern of marketing of sheep from Cowal.

Stage of Finish

Over the years the aim of selling more lambs fat has been promoted on all sides. Unfortunately, the wet summer of 1985 not only reduced the feeding value of crops and forage but also delayed sale beyond the normal time. Feeding lambs still on hand at the date of the survey visit, were included in the finished category.

	FAT LAMBS AS % OF TOTAL SALES
Lochgoilhead	-
Strachur	2
Strathlachlan	2
Kilfian	24
Kilmodan	30
Overall, 1985	14%
Overall, 1952	9%

In 1951, in many ways a worse season than 1985, the proportion of lambs graded was 9%; again in 1952, a normal season, the same pattern. Whether the seasonal effects in 1985 were such that a gap of only 5% was inevitable or whether it is an area where producers prefer to include some gradeable lambs to enhance their overall prices in the store ring is a matter of opinion. Certainly, several farmers made this point.

Whatever the answer, producers are selling more store and finished lambs per 100 ewes mated than in the fifties. For strict comparability, allowance has to be made for the practice of retaining whether hoggs in those early years. In the fat/store calculations, these have been treated as store sales.

LAMB "SALES" PER 100 EWES

	1952	1985
Fat	3	9
Store	29	54
Whether Hoggs Kept	6	-
	38	63
No of Flocks	34	23

Almost all the gain of 25 lambs **per 100 ewes mated** arises from an extra 22 at speaning (89% as against 67%) and 2 fewer ewe lambs retained in 1985 (26 as compared to 28). It has to be remembered, however, that in 1952 all the flocks were breeding Blackface lambs, whereas, in 1985 approximately 13% of the ewes were crossed.

Hogg Wintering

Table 18

METHOD OF WINTERING EWE HOGGS

	1984-85			1950-51		
	No of Units	No of Hoggs	%	No of Units	No of Hoggs	%
Shed	4	336	8	-	-	-
Home	12	2069	46	26	3937	48
Away	3	2053	46	4	4223	52
Home and Away	4	*	-	10	*	*
Total	23	4458	100%	40	8160	100%
No per 100 Ewes		25			31	

* already allocated

The major innovation in the intervening years was shed wintering. A farmer in the Kilmodan parish was one of the first to house ewe hoggs and has continued ever since. With only a further three farms and 8% of the ewe hogg population, the practice has not become widespread.

As for cattle, the trend in some key factors between the past and present surveys is given in following section.

THE LONG TERM TREND, 1950-85

Although the preceding sections summarise the difference between farming in Cowal in the early fifties and today, the figures cannot of themselves throw much light on what happened in the intervening years. Through the good offices of DAFS, it has been possible to fill this gap by means of the Parish Summary Sheets from the June Census. As the initial survey covered 59 per cent of the land area and 72 per cent of the ewe stocks in the five parishes, the trend thereon is a reasonable reflection of the movement on the survey farms.

TABLE 19

TRENDS IN SIZE AND REGULAR LABOUR AT JUNE

Indices based on 1950 = 100

	(1)Lowground		Rough Grazing		Total Area		(2)Regular Labour	
Five Parish Totals	ha	Indices	ha	Indices	ha	Indices	no	Indices
1950	2489	100	58316	100	60805	100	128	100
1960	2370	95	52738	90	55108	91	111	87
1970	2125	85	49158	84	51283	84	79	58
1980	1795	72	43758	75	45553	75	54	42
1985	1693	68	37437	64	39130	64	47	37

1) Crops and grass. (2) All male labour but excluding occupier.

For comparative purposes, total area is the best indicator of change. As expected, in 1985 the index for the parishes was higher than that of the survey area, (59). In other words a reduction of 36 per cent as against 41 per cent in the respective areas in 35 years.

TABLE 20

LOSS OF AGRICULTURAL LAND, 1950-1984

By Parishes

(000 ha)

	Lochgoil/ head	Strachur	Strath/ lachlan	Kilfinan	Kilmodan	Total	Survey	Outwith Survey Area
1950	22.9	6.1	5.0	13.9	12.9	60.8	35.8	25.0
1985	18.0	5.4	2.5	5.6	7.6	39.1	21.2	17.9
Fall	4.9	0.7	2.5	8.3	5.3	21.7	14.6	7.1
% Fall	21%	11%	50%	60%	41%	36%	41%	28%
Fall in Survey Area	18%	18%	38%	66%	44%		41%	

Of the total loss of land of 21,700 ha, almost exactly two-thirds was within the survey area. As detailed earlier, land resumed or acquired for planting over the period amounted to some 14,500 ha leaving a balance of only 100 hectares to other uses.

The ill fated Portavadie Project accounted for some 55 ha and the aggregate figure for caravans, holiday chalets and other tourist orientated developments on units previously in the survey was some 25 ha.

One other item which must have had a bearing on the loss of land, particularly lowground, was the new road from Strachur to Glendaruel and on to Tighnabruaich. In almost every locality the line of this road passed through land included in the original survey.

Labour

Not having the figures for occupiers over the whole time series, makes comparisons less meaningful. However, the trend in the five parishes by 1985 showed a reduction of 63 per cent. The equivalent figures for the survey units was 61 per cent.

Cows The trend is shown in the following table

TABLE 21

TREND IN CATTLE BREEDING NUMBERS, at June

1950 = 100

Five Parish Totals

	1950	1960	1965	1970	1975	1980	1985	Survey Area, 1985	Survey Area, % of Total
Dairy cows	621	289	258	210	158	166	160	-	-
Indices	100	47	42	34	25	27	26	-	-
Beef Cows	641	1399	1903	1670	1847	1485	1299	765	59%
Indices	100	218	297	261	288	232	203		

Dairy Cows

Although there was a significant number of dairy cattle on non-dairying farms in the early fifties, the figures thereafter reflect the decline of milk production in the district.

Hill Cows

In the fifteen years to 1965, hill cow numbers had virtually trebled. Ten years later, numbers were still around the same high level but in the ten years to 1985 they had fallen to their lowest number since before 1960 but still double that of 1950.

That hill cow numbers have been falling in recent years is common knowledge but where and by how much is less well known. An examination of the change in numbers and distribution of hill cows in Scotland between 1976 and 1984 showed a falling trend in all 33 counties of Scotland. The national suckler herd declined by 63,000 head or 14 per cent but more dramatic falls occurred in certain counties:-

	No. in 1976 000	Fall 000	Fall %
Perth	30.5	5.7	19
Argyll	30.3	7.0	23
Inverness	23.9	5.0	21
Ross & Cromarty	13.6	2.0	15
Sutherland	5.9	1.7	29
	104.2	21.4	

These five Highland counties accounted for one third of the fall in the national herd between 1976 and 1984.

In absolute terms, the county of Argyll had the greatest decline in numbers and dropped from fourth to seventh place in the "hill cow league".

Over the same eight years in the five Cowal parishes, hill cow numbers fell by 468 or 26 per cent as against 23 per cent at county level.

The similarity in direction and degree of change in the hill cattle population - at local, county and national level - illustrates the over-riding effect of factors originating far beyond the farm gate. Moreover, it highlights the danger of drawing conclusions on the effects of afforestation - or any other single factor - on the size of, or trend in, the hill cow population in the survey area.

Ewes

Long Term Trend

As in Scotland generally, **hill** ewe numbers rose to a peak in the mid-sixties. Despite fifteen years of afforestation there were over 6,000 more ewes in the five parishes by 1965.

TABLE 22

TREND IN EWE NUMBERS, at June
1950 = 100
Five Parish Totals

	1950	1960	1965	1970	1975	1980	1985	Survey Area 1985	
No of Ewes	36826	41262	42954	38073	37661	31953	28660	18027	63%
Indices	100	112	117	103	102	87	78	68	

Note Figure from 1970 onwards are for hill and upland ewes.

From 1965 onwards ewe numbers continued to decline through to 1985. In this twenty year period the ewe population fell by 14,300 or 33 per cent. It was not until the late seventies, however, that the "parish flock" was smaller than it had been in 1950.

By 1985 - compared to the population in 1950 - survey ewes were down by 32 per cent as against 22 per cent in the parishes as a whole. Again, pointing to heavier afforestation within the survey area.

Short Term Trend

The picture can be brought into sharper focus by the use of more local statistics.

TABLE 23

INDICES OF EWE NUMBERS
at County, District and Parish Level
1980 = 100

	1980	1981	1982	1983	1984
Argyll	100	101	102	101	102
Cowal	100	100	100	99	96
Five Parishes	100	101	99	88	88

The overall scene in the county over the recent past has been one of stability, with the fall in hill ewe numbers being compensated by the rise in upland ewe numbers. In Cowal, even in the space of four years, the trends were diverging and markedly so in the case of the five parishes.

Unlike cattle, sheep numbers are directly and irrevocably reduced by clearance for planting. The foregoing indicates that, although external factors can be operating in favour of sheep, a point is reached where the loss of hill land is such that - despite advances in husbandry and improved stock carrying capacity on the unaffected farms a fall in the number of ewes is inevitable, with the concomitant loss of wool and cast ewe sales. The lag time for lambs can be much longer.

Changes in Levels of Production

The following calculation illustrates the overall change in the levels of sheep production from the original survey area as it was and the present day, by which time it had been reduced by 41 per cent in land area and carried 32 per cent fewer ewes.

	Formerly*	Presently+	Difference
Ewes Mated	26,586	18,027	8559
Lambs Weaned	17,813 (67%)	16,044 (89%)	1769 fewer, but
Lambs Kept	7,444 (28/100)	4,687 (26/100)	2757 fewer replacements
Lambs Sold	10,369	11,357	988 extra for sale
Cast Ewes	5,051 (19%)	3,065 (17%)	1986 fewer
Sheep Clipped	31,903	21,272	10,631 fewer @ 1.82kg
			= 19,348kg less wool

*Ewes at Nov. 1950 but at the more normal 1952 levels of performance; + 1985

In broad terms, despite a cut of one-third in flock size, there were 1000 extra lambs coming onto the market in 1985. Against this, cast ewe sales were 2000 fewer and the annual wood clip off the survey area was 19.3 tonnes less than in former times.

It need hardly be said that the foregoing is a "then and now" illustration of the change in the physical volume of sheep and wool coming off a significant part of Cowal after a time lapse of 35 years in which the number of units dropped from 41 to 23.

Changes in Levels of Production Per Unit

With the wide range in flock size and the restructuring of units as afforestation spread, **averages** per unit or per flock have to be viewed with caution. However, the following table paints the broad picture for the survey area as a whole.

TABLE 24

CHANGES IN AVERAGE PRODUCTION LEVELS

Per Unit

	Formerly	Presently	Change	% Change
No of Flocks	41	23	18	(-) 44%
Averages:-				
Size of Flock (ewes)	648	784	136	21%
No of Lambs Sold	253	494	241	95%
No of Ewes Sold	123	133	10	9%
Weight of Wool Sold (kg)	1416	1683	267	19%

The noteworthy increase in lamb sales per unit deserves closer scrutiny:-

136 extra ewes @ 63 lambs/100	=	86
648 ewes @ 24 extra lambs/100	=	155
Extra lambs for sale		241

Approximately two-thirds of the increased production came through improved lambing performance although as noted earlier, lower replacement rate played a minor part.

Although the wider socio-economic aspects of sheep production or forestry were not part of the remit in either survey, a word in closing may be in order.

The temptation of thinking that afforestation can proceed in any area with little effect on overall sheep production must be resisted. The improved levels of performance recorded here arose - from a low base and over a long time span - during a period of unprecedented advances in sheep husbandry. They came not because of forestry but in spite of it. Had there been no afforestation in Cowal, the increased level of production for the whole survey area would not have been disimilar to that of the remainder. Whether given today's preoccupation with surpluses, such a massive increase would be welcome, is another story.

Postscript

The experience gained on this survey has strengthened a long held conviction that far more rigorous attention should be given to the long term effect on the resident population in hill areas of a change in land use from farming to forestry.

COWAL SURVEY

AFFORESTATION

In common with many other parts of Argyll, the Cowal peninsula is very heavily afforested by now with 38% of all land under trees. The interest in planting land arises from exceptionally favourable growing conditions and attainable growth rates some 30% higher than the Scottish average. Consequently, commercial afforestation interests have been prepared to offer prices attractive to many landowners in the area. Much of the remaining unplanted hill is over 1,200 feet and unsuitable for tree growth and this will limit further tree growth. However, the easing of traditional official constraints on the planting of better agricultural land and the major changes of early 1988 regarding national fiscal and grant-aiding policies for afforestation could all give rise to a new impetus to afforest under these favourable climatic conditions.

Timber production in the established forests provides the majority of employment in both harvesting and haulage. There is however some work created in new planting and restocking. Current activity is summarised as follows:

Statistics

	Forestry Commission	Private Sector	Total
Area of plantations (ha)	20,871	16,029	36,900
Production sawlogs '000m^3	40	9	49
Small roundwood '000m^3	26	5	31
Area of new plantations (ha/annum)	405	1,503	1,908
Area of Restocking (ha/annum)	150	neg	150

(NB: Area of Cowal Peninsula 96,900 ha)

Much of the log production coming forward onto the market is derived from some of the early, pre 1955 plantations. It will be some time (20 - 40 years) before the benefit of the extensive private plantings of recent years will be seen in terms of roundwood production. The age class distribution of the forests is thought to be as follows:

	At 1947	At 1955	56-60	61-65	66-70	71-75	76-80	81-85	Total
Forestry Commission	6755	9090	1501	1664	1846	2583	2163	2024	20871
Private Woodlands	5638	4500	-2000*	535	1030	911	3536	7517	13529
TOTAL	12393	13590	1501	2199	2876	3494	5699	9541	36900

* Estimated transfer to FC ownership

The quinquennial planting figures indicate a fairly steady growth in the area planted by the Forestry Commission. Private sector plantings have seen a more rapid increase particularly in recent years due largely to the introduction of the Forestry Grant Scheme. The age distribution of the woodlands also indicates an increase in forest areas at or approaching first thinning stage suggesting that further job opportunities are possible. Scope for this will however depend on the stability classification of the respective woodlands and whether in fact a non-thin policy is to be adopted.

Utilisation and Employment

Sawlog and small roundwood output is likely to increase gradually as production from the younger plantations comes on stream. This should at least maintain present employment levels in the forest and sawmilling industries. There are two major sawmills in the Cowal peninsula, one producing mining and pallet timber from small roundwood, the other using sawlogs to produce construction grade timber. Total roundwood intake is around 26,000m^3 per annum with a sawn outturn of 17,000m^3. Much of the remaining roundwood production is used in sawmills both within and outside the HIDB area. Currently there is considerable demand for roundwood because of recent investment both in expansion of existing mills and in new greenfield projects in South Scotland and Northern England.

It is difficult to be absolutely precise with statistics relating to forestry generated employment. This is because of the complications of the status of private contractors who may have been double counted in both Forestry Commission and private management companies' figures. Taking a conservative view of the figures and acknowledging that the contractors and hauliers may include people not resident in the Cowal area, employment is estimated as follows:

Forestry Commission employees	94
Private Sector employees	50
Private Contractors/Hauliers	74
Sawmilling/processing	30
	148

In addition to the above direct employment the area's forestry also generates substantial additional earnings estimated at around £1.8m per annum.

Comparisons with the 1955 Survey Report

Because the data on forestry boundaries in the original survey was farm-based, it has not proved possible to subdivide Forestry Commission and Private sector planting figures to correspond exactly. The more recent survey report, however, indicates distribution of the former farm-land as follows:

Forestry Commission	8,913	ha
Private Sector	5,571	ha
	14,484	ha

It is interesting to note that the 14,484 ha of afforestration on the survey farms constitutes 40% of their original agricultural area of 35,786 ha, recorded in 1950. This is not a dissimilar ratio to that of the whole of the Cowal area where forestry occupies 38% of all land.

The original farm-survey area did not cover centres of population in Dunoon, Glenbranter, Lochgoilhead and Ardgarten. These can be considered as travel to work areas for woodlands throughout the Cowal Peninsula and are also centres for the sawmilling industries and their associated employment. It is, therefore, not possible precisely to allocate employment figures to the survey area because of the lack of information on production at the individual forest level. Nevertheless it is possible to make certain assumptions based on forest area per man employed figures for the whole of Cowal. This is illustrated below:

	TOTAL
Woodland area 1985 in: (Cowal Survey (ha))	14,484
Calculated forest area/man employed (Whole Cowal area excluding sawmills)	280.9 (average)
Calculated "forest employment" in Cowal Survey area	52

The Farm re-survey report suggests that approximately half the fall in the agricultural labour force was due to the advance of afforestation. This amounts to roughly 30 persons. It could be argued that with the forest workforce now employed in the survey area calculated at 52, the losses have been compensated by the gains albeit that some of these jobs may not be retained by people living within the survey area and may not have been directly transferrable from the agriculture to the forestry sector. A precise estimate is thus difficult to make but employment in the original survey area attributable to forestry plantations is likely to be in the range 30-52 persons.

Future employment trends are also difficult to estimate but with a job ratio of establishment : maintenance/harvesting of the order of 20:80 and the bulk of the private woodlands and half of the Forestry Commission woodlands are plantations of 35 years and younger, the potential for jobs in future thinning and clearfell work is considerable.

CONCLUSIONS

In the Cowal peninsula as a whole, afforestation has made a significant impact both in environmental and economic terms over the past 35 years. The area now contains forest age classes which will be able to support a forestry harvesting and timber processing industry in years to come.

In the longer term employment is likely to remain at least at present levels given the balancing influences of increased volume outturn as against improving productivity/mechanisation. Given the current strength of the local processing industries and strong pressure on log supplies from the south the medium term outlook appears to be bright.

28 April 1988