

Not for publication

H.F.R.O. 216

HILL FARMING RESEARCH ORGANISATION

FARM REPORTS AND SUMMARY OF FLOCK RECORDS

1976

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I. FARM REPORTS - 1976

A. GLENSAUGH

WEATHER

The winter weather of 1975-76 was similar to that of recent years with little snow or severe frost. However, cold wet weather occurred in February and early March during a period which coincided with the lambing of the early lambing Greyface flock. Spring and early summer were notable for the absence of frost and generally the weather was good during the main lambing period. Grass growth was early and sustained.

Exceptionally dry conditions with sunshine were experienced during June, July and August. This did not seriously affect grass and crop production until August when the drought effect became increasingly obvious. The fields grazed by the Greyface sheep flocks were particularly affected in August and the rape and kale crops began to wither. These conditions and experimental requirements forced changes in the planned programme of marketing weaned lambs and other livestock.

Heavy rainfall occurred in early September and autumn was generally wet. The rains produced a rapid growth of grass and there was ample grazing to meet demands. Severe rainstorms in September and late October caused severe damage to recently repaired hill roads and also a major erosion at the end of the overflow spillway of Loch Saugh.

Early winter of 1976 was cold with frosts and snowfalls in December.

SHEEP

With the exception of the North Country Cheviot flock on East Finella all sheep are involved in research projects. The management of these flocks was according to the various research schedules.

Total sheep numbers are similar to 1975 but there have been changes in the structure of the Mid and West Finella flocks.

The number of lambs weaned from the Cairn and West Finella flocks were, respectively, 13 and 20% below 1975, but the remaining flock production was similar to that of 1975. Lamb weaning weights were equal to, or slightly above, those of 1975.

With the exception of the Cheviot flock, the mean liveweights of all flocks of ewes at November 1976 were below those of 1975. The reductions ranged from 1.0 to 8.2 kg. Substantial reductions were also recorded in the gimmers and hoggs of the Cairn and Birnie flocks and also in the Blackface and Texel x hoggs on West Finella. In contrast, the mean live-weight of gimmers and hoggs of the remaining flocks were equal to, or well above, those of 1975. The data are shown in the table of liveweights.

The mean death rate of ewes and gimmers was 4.4% and for hoggs 6.1%. The latter figure was almost entirely due to an outbreak of pneumonia in the Cairn and Birnie hoggs when inwintered. Hogg deaths on other hefts were negligible. The small number of deaths in the Texel x Greyface experiment was due to respiratory diseases.

Winter Feeding

Supplementary feeding of ewes was as per research requirements which varied according to flock and time of lambing. Apart from the early lambing Greyface flock feeding started at the beginning of January and continued until 19th May.

Mid and West Finella ewes were offered Rumevite food blocks in October and early November 1976 before these flocks were brought into inbye fields for mating.

The stock ewe lambs from East, Mid and West Finellas were removed from their hill grazings after weaning in mid August and grazed on inbye pasture with supplementations of kale, concentrates and hay.

The hogs from Cairn and Birnie flocks were housed between 5th November 1975 and 19th April 1976.

Winter Feeding

FLOCK	HAY		CONCENTRATES		TOTAL COST PER HEAD
	Period	Total per head kg	Period	Total per head kg	£
<u>Ewes</u>					
Cairn	3 Jan - 3 May	17.8	15 Jan - 19 May	29.4	3.50
Birnie	3 Jan - 23 Apr	7.8	15 Jan - 7 May	26.5	2.71
East, Mid West Finella)	2 Jan - 12 Apr	29.6	8 Mar - 26 Apr	10.7	2.51
<u>Greyface:</u>					
Early lambing	10 Dec - 12 Apr	78.2	13 Jan - 5 May	86.4	11.65
Late lambing	2 Jan - 9 Apr	71.2	9 Feb - 12 May	45.3	7.73
<u>Hoggs</u>					
Inwintered Cairn & Birnie	5 Nov - 19 Apr	95.0	5 Nov - 19 Apr	34.4	8.09
Outwintered Finella	20 Nov - 21 Apr plus Kale	11.7 @ £2.40 per head	29 Feb - 21 Apr	13.4	1.92 2.40
					<u>4.32</u>

Hay @ £55 per ton
 Concentrates @ £88 " "
 Kale @ £40 " acre

The mean death rate of lambs between birth and weaning was 9.4%.

Lamb Mortality 1976

FLOCK	BORN ALIVE	DEAD			
		Birth to marking	Marking to weaning	Total No.	%
Cairn	238	26	10	36	15
Birnie	263	8	7	15	6
Mid Finella	192	10	9	19	10
West Finella	180	13	10	23	13
<u>Greyface</u>					
Early lambing	185	18	2	20	11
Late lambing	191	-	4	4	2

Lamb Disposal

Two hundred and seventy ewe lambs were retained for flock replenishments.

Sixty-nine Dorset x Greyface lambs were sold fat at £17.46 per head and 160 "top" stores averaged £14.50. Second draw stores sold at later sales averaged £14.85.

Eighty lightweight Blackface lambs were sold fat off rape and averaged £14.16. Top draw store BF lambs were sold at £12.15 and top Cheviot lambs averaged £14.85.

CATTLE

The cattle herd was again used for research projects. Cows were synchronised for oestrus in four breeding groups and inseminated using semen taken from the Charolais bull. The bull was grazed with the main herd during summer and an additional Charolais bull was hired to cope with any returns to service in a second group of cows which were surplus to the experiment.

The 1975-76 experiment was concerned with one level of below maintenance nutrition in late pregnancy followed by two levels of nutrition in early lactation. All experimental cows were turned out to graze on 12th May and remained on experiment until 8th September. The cows and calves were weaned on 9th September at a mean age of 5-6 months.

The cows were housed on 9th September in preparation for the 1976-77 experiment.

Sixteen calves were sold on 10th September at an average of £31.75 per cwt. The remainder were grazed in two groups and supplementary fed concentrates at 3 lb/hd/day until put into the cattle court at mid-October. Calf weaning coincided with the onset of an exceptionally wet period and, though the calves were well fed, they received a post-weaning check from which they did not recover until after housing.

Fourteen bulling heifers were mated with a young Aberdeen Angus bull purchased in March 1976. Four cows were yeld, one calf was born dead and one died soon after birth.

Calves sold September 1976

<u>Breed of Cow</u>	<u>Sex</u>	<u>No.</u>	<u>Pre-sale Weight</u>	<u>Average Price</u> £
Hereford x	M	9	601	184.38
" x	F	2	559	133.50
Galloway x	M	3	634	179.83
" x	F	2	605	139.00

CROPPING 1976

Rape	9 acres
Kale	11 "
Hay	36 "
Sown to grass	11 "

In addition, approximately 150 tons of silage was made from cutting surplus grass from various experimental grazing plots. This was a tedious procedure and during May and June the farm field staff spent more than 60% of their working hours on this or related work.

HEATHER BURNING

Several areas of heather on East Finella, Cairn and Birnie hills, totalling approximately 250 acres, were burnt during the 1975-76 winter. Burning conditions were not good during winter. However dry weather in March made good burning possible but the occasions on which this was safe were rare. Consequently Muirburn had to be abandoned before the end of the official season.

FENCING AND WATER SUPPLIES TO FIELDS

Lodge, Laundry, Met 1, Met 2, Drive 1, Drive 2, Steading, Near Woodside, Far Woodside and Upper Cottar fields were all rewired. Six of these fields were sub-divided with semi-permanent electric fences to provide 18 paddocks, each of approximately 2.5 acres for the use of the cows and calves.

A major stretch of boundary fence between Cairn hill and Arnbarrow farm is currently being replaced.

Water troughs supplied from the Water Board source were installed in Steading, Drive, Met and Triangle fields.

The supply of water from private sources was improved.

ELECTRICITY SUPPLY

The farm steading and some buildings used for experimental work were rewired and the electric services upgraded to meet requirements. Though the supply wiring to the sheep house was renewed the internal wiring of this building still requires attention.

BUILDING MAINTENANCE AND ALTERATIONS

The conversion of the old hostel at West Lodge into two flats has now been completed and the external paintwork renewed. The walls were given two coats of Snowcem.

The sheep dipper was rebuilt to an improved design but on its original site.

Roadside kerbing at the farm entrance was installed by the Regional Council who also improved drainage from the road.

Approximately 100 yards of dry stone wall was rebuilt around the cottages at the farm entrance.

A contract has been placed for the installation of a major drainage and dung handling scheme at the rear of the cattle shed and sheep and cattle handling pens. The scheme was devised in conjunction with the North of Scotland College and has been approved by the local River Purification Board.

Additional toilet facilities have been sited at the rear of the main laboratory building.

ROAD WORKS

Further improvements were made to the hill road leading to the Greyface plots and the hill beyond.

The hill track leading to Birnie hill was improved and extended.

A new track was laid through Drive field leading to West Finella hill.

GENERAL

Progress has been made in the dismantling and removal of defunct experimental materials and other rubbish. However, much remains to be done, particularly the removal of fencing around abandoned experimental areas and also derelict farm fences on the hill.

B. LEPHINMOREWEATHER

January was very wet with severe gales mid-month. February began cold but became milder with excellent weather at the end of the month and into March, although occasional days of cold east wind cut back any growth. The second half of March was the worst for some years being cold and wet with snow showers. April was also cold and wet for the first ten days and as a result no spring dipping was carried out, but thereafter four days of drizzle and mist followed by a warm sunny period gave excellent growth and near-excellent lambing conditions. May was a poor month with above average rainfall and June was little better, except for the last week which gave ideal haymaking weather. July on the whole was a good month although unsettled in the second half. August began wet but a very warm sunny period from 12th August saw no rainfall until 8th September. The second half of September was mixed followed by a mainly wet October and November. December was the worst for many years - a first week of hard frost followed by sleet with appreciable falls of snow on the higher ground necessitated the hand feeding of both Midhill and Low-End ewes from the 10th to 21st December.

Rainfall 1976

<u>Month</u>	<u>Rainfall</u> (mm)
January	258.8
February	120.1
March	244.1
April	83.8
May	176.0
June	84.8
July	57.9
August	25.9
September	106.7
October	185.7
November	193.8
December	160.8
	<hr/>
Total	1698.4 (66.87 inches)
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1975	1618.0 (63.71 inches)
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SHEEP

Midhill ewes came through the winter in very lean condition despite an additional supplement of high energy blocks (Rumevite) from 8th January until 2nd March when concentrate feed was offered. Lamb growth was poor throughout May and June due to the wet conditions but this was compensated to a large extent by the very dry late summer and early autumn, which, although giving less than average growth, resulted in grazings of above average quality.

Barnacarry ewes again came through the winter in good condition and were offered Rumevite blocks from 13th February until after lambing.

Low-End ewes were again housed from mid-January until after lambing when the inwintering experimental programme begun in 1969-70 was concluded.

Lamb weaning weights tended to be lower than in previous years and this was particularly so on Midhill. The mean weaning weights of single and twin lambs on Midhill were 23.8 kg and 20.5 kg respectively, the lowest weights recorded during the second phase of the Midhill Development Study. Consequently a higher proportion of smaller lambs than usual had to be sold.

The overall farm weaning percentage was 88.

Figures for previous years were:-

<u>Year</u>	<u>%</u>
1975	85
1974	87
1973	97
1972	97
1971	96
1970	82
1969	87

Ewe winter feed costs were:-

Barnacarry	£2.03
Midhill	£2.01
Low-End	£5.68

One hundred and eleven third draw wedder lambs from Midhill and Low-End were sold at Stirling on 18th August at £9.70 per head. Seventy-five wedder lambs realised £5.95 per head, 2 sow-mouthed wedder lambs £9.30 per head and 13 rigg lambs averaged £5.75 at Stirling on 25th August. One hundred and five ewe lambs averaged £6.55 at Stirling on 1st September - 55 at £7.60 and 50 at £5.40. On 15th September 29 wedder lambs realised £8.40 and 31 ewe lambs £5.75. One hundred and six ewe and wedder lambs were sold at Paisley on 27th September averaging £4.70 per head. One hundred and fifty top and second wedder lambs were consigned to grass at Bush at a rental of £1.30 per head. Of 147 lambs sold, 138 averaged £12.80 in a buoyant store market and 9 sold fat realised £14.60. Seventy-two Blackface aged ewes were sold at Paisley on 4th October realising £7.90 per head and on 18th and 29th October 68 ewes averaged £13 per head to a top of £16.70. Nine gimmers were sold fat at £15.20 per head and 4 realised £10.30 per head in the store market. One hundred and thirteen draft ewes were retained for experimental purposes as were 20 wedder lambs.

Hogg wintering

Hoggs from all three hirsels were wintered at home. Low-End were housed from 18th November until 2nd April when they returned to the hill, the feeding of concentrates continuing until 16th April. A total of approximately $1\frac{1}{2}$ cwt of hay and 38 lb of concentrates were fed at a cost of £5.41 per hogg.

Midhill hoggs were taken off the hill on 28th October and housed until 13th November. Of 125 hoggs, 70 were wintered at Garbhalt croft field and the remaining 55 poorer hoggs on the low ground at the farm. Total feed consumed was 127 lb of hay and 45 lb of concentrates at a cost of £4.25 per head.

Barnacarry hoggs were gathered off the hill on 20th November and housed on 8th December returning to Barnacarry croft on 15th January where they remained until 8th April when they returned to the hill. No hay was offered while on the croft and a total of 41 lb of concentrates was fed at a cost of £1.54 per head. While housed each hogg consumed 56 lb of hay in addition to concentrates at a cost of £1.14 per head giving a total winter supplementary feed cost of £2.68 per head.

N.B. Hay valued at £45 per ton; concentrates at £83 per ton.

HILL CATTLE

Winter feeding of the August/September calving cows began on 5th November and continued until 12th May when hay feeding stopped; concentrate feeding continued until 22nd May (3 lb per head per day). A total of 24 cwt of hay, $7\frac{1}{2}$ cwt of straw and $3\frac{3}{4}$ cwt of concentrates was fed at a cost of £77 per cow. Total supplement to the calves during the winter was 6 cwt of hay plus 2 cwt of concentrates at a cost of £21.20 per calf.

Five bullock calves were sold in August averaging £143 per head to a top of £157. One bullock calf was sold in October at £160 and 4 heifer calves at £125 per head. Three heifer calves are being overwintered for herd replacement. Of the 20 cows and heifers due to calve in August 1976, 1 heifer aborted in June and a second was barren. Three unrelated calf deaths occurred in August at birth and a Friesian and 2 Simmental cross calves were purchased and twinned on. A $2\frac{1}{2}$ -year-old heifer which had slowly been losing weight since calving was destroyed on veterinary advice on 14th December. Post mortem examination failed to reveal the presence of any disease or causal organism.

Calf Weaning Weights

	<u>September 1975 (Spring born)</u>		<u>1976 (1 yr old)</u>		
	<u>No.</u>	<u>Weight (kg)</u>	<u>No.</u>	<u>Date Weighed</u>	<u>Weight (kg)</u>
Heifers	6	202	5	October	314
Bullocks	6	235	5	August	303

Hill Cows August-September Calvers

	<u>Age</u>	<u>No.</u>	<u>October 1976 Weight (kg)</u>
Cows	9	1	522
	8	1	576
	7	10	504
	4	4	502
	3	4	427
Heifers	2	3	378

Herd Reconciliation

<u>Born</u>	<u>October 1975 No.</u>	<u>Deaths</u>	<u>Sales</u>	<u>December 1976 No.</u>
1968	4	-	-	4
1969	2	1	-	1
1970	10	-	-	10
1973	4	-	-	4
1974	4	1	-	3
1975/6	-	-	-	3

ARABLE GROUND

Advantage was taken of a fine spell of weather at the end of June when fields 2 and 4 north were cut for hay. Field 2 was barn dried and field 4 cured in the field due to insufficient drier capacity. Approximately 11 tons of hay were dried using 1167 units at 1.57p per unit, i.e. a cost of £1.66 per ton.

HEATHER BURNING

March 1976 was very wet with nearly 10" rain and no heather burning was possible.

HILL GROUND

The 17 acre paddock on the Low-End hirsell which has never fulfilled its early promise was given 2 cwt per acre of compound fertiliser (20-6-12) in early June, followed by 2 tons per acre of ground limestone in September.

Cost per acre (materials only) - Compound £7.28
G. Limestone £11.50

Spreading was carried out by farm labour using the farm crawler and a hired lime spreader.

BARNACARRY/FEORLINE HIRSELL

The 70 acre afforested triangle bounded by Barnacarry hirsell on one side and Feorline on the other was fenced along its base, i.e. the hill access road, providing an enclosed area which can now be used for specific purposes such as hogg wintering. The area is not totally tree covered and provides many sheltered clearings ideal for wintering but has the disadvantage of having been selectively drained to a depth of two feet in places through the standing timber which may prove hazardous to grazing stock.

The fank and walk-in dipper built by farm labour are nearing completion and will be ready for use in the spring.

The lower slopes of Feorline were fenced in the spring providing two 45 acre paddocks for inbye lambing and tupping. A proportion of each area will subsequently be improved by surface regeneration.

LOW-END HIRSELL

The inwintering project has been completed and the hirsell is now involved in the investigation of mid-pregnancy nutrition. The north or 'control' side of the hirsell has been sub-divided into two using 12½ g high tensile wire and the hirsell now comprises three areas of approximately 130 ewes each. A section of the hill fank was roofed over to provide improved facilities for weighing and handling.

BUILDINGS

The roof of the Officer in Charge's house which had been slated initially with inferior material was replaced with concrete tiles and considerable economy will result in annual maintenance charges.

C. SOURHOPEWEATHER

Once again little snow fell during the winter months and this period was also much drier than last year with only 158.0 mm (6.2 inches) of rain between November and February inclusive compared to 319.9 mm (12.6 inches) for the same period in 1974/75. During the following three months rainfall was a little above average at 248.5 mm (9.8 inches) and favourable conditions prevailed throughout most of the lambing period. Exceptionally high temperatures and dry weather persisted for most of June, July and August, giving rise to the worst drought conditions experienced at Sourhope for a considerable number of years and leading to severe curtailment of grass growth. The summer drought was followed by 399.1 mm (15.7 inches) of rainfall during September and October which was more than double the average amount for this autumn period. This encouraged the renewal of grass growth to a certain extent, but not enough to give conditions for tugging as good as were experienced last year. Despite the erratic pattern of rainfall over the 12 months to the end of October 1976, the total amount at 882.3 mm (34.7 inches) was much the same as for the two previous years.

Rainfall 1975-76

	<u>Month</u>	<u>Rainfall</u> (mm)
<u>1975</u>	November	43.5
	December	25.1
<u>1976</u>	January	41.1
	February	48.3
	March	99.6
	April	70.4
	May	78.5
	June	11.6
	July	20.3
	August	44.8
	September	213.0
	October	186.1
	Total	882.3 (34.7 inches)
<u>1976</u>	November	26.6
	December	117.0

SHEEP

The majority of the ewes entered the winter of 1975-76 in similar condition to the previous year, except the Project I ewes and gimmers which continued to show a substantial improvement over the year as they had also done the year before. Feed requirements of outwintered ewes were higher than for the previous year. A total of 62.7 lb dry matter (hay, beet pulp, concentrates and feed blocks combined) was fed on average to all outwintered ewes at a cost of £2.35, compared with 56.1 lb at a cost of £1.83 in 1974-75. With the average feed cost for the 1615 outwintered ewes at £2.35, the range for individual hefts was from £3.52 to £1.38. The average feed cost of outwintered ewe hoggs was £2.47 per head, compared with £1.95 the previous year.

The Rigg and Gairs ewe stock was again inwintered, all ewe hoggs coming into the shed on the 22nd January. Rigg ewes were housed on the 19th January and the Gairs ewes on the 26th January. The Gairs ewes on housing were in much better condition than the Rigg ewes and this continued to be the case throughout the entire housing period, during which the Rigg ewes had a higher feed requirement. A total of 201.0 lb dry matter on average was fed to the ewes at a cost of £5.28 per head, compared with 189.1 lb at a cost of £4.53 in 1974-75. For the inwintered ewe hoggs the feed cost was £3.67 compared with £3.48 for 1974-75.

Some feed data for both inwintered and outwintered sheep is shown in the following table, the feed items being costed as follows: (1974-75 prices in parentheses) - Hay £45 per ton (£40); Sugar beet pulp cubes £68.90 per ton (£64); Concentrate pencils £82.75 per ton and Concentrate cobs £89.80 per ton* (average concentrates £80 in 1974-75); Grass nuts £77 per ton (£66); Ewe and lamb food £93.50 per ton (£95); Rolled barley £82 per ton; "Stockade" feed blocks £106.40 per ton (£91); "Norbloc" feed blocks £137.32 per ton.

* Concentrates fed to outwintered ewes in cob form, to inwintered ewes in pencil form.

Hogg Feed Data

	Hay (1b)	Ewe and Lamb Food (1b)	Rolled Barley (1b)	Norbloc Feed Blocks (1b)	Grass Nuts (1b)	Sugar Beet Pulp Cubes (1b)	Concen- trates (1b)	Average Cost per Hogg
Outwintered Hoggs	20.6	1.1	1.0	0.2	26.4	26.4	6.0	£2.47 (£1.95)*
Inwintered Hoggs	71.7	1.5	-	-	7.5	31.7	25.4	£3.67 (£3.48)*

* 1974/75 costs

Ewe Feed Data

	Period	Hay (1b)	Sugar Beet Pulp Cubes (1b)	Concen- trates (1b)	Stockade Feed Blocks (1b)	Norbloc Feed Blocks (1b)	Average Cost per Ewe
Outwintered Ewes and Gimmers	Storn Feed (i.e. to 17/3 incl.)	3.8	4.5	-	3.6	4.3	£0.65
	Pre-lambing Feed (i.e. 18/3 to 17/4 incl.)	7.6	8.3	16.7	1.8	1.5	£1.26
	Post-lambing Feed (i.e. from 18/4 incl. that fed to twins)	-	-	9.8	0.1	0.7	£0.44
	TOTAL	11.4	12.8	26.5	5.5	6.5	£2.35 (£1.83)*
Inwintered Ewes and Gimmers	Pre-lambing Feed (i.e. to 17/4 incl.)	111.7	44.1	28.3	-	-	£4.64
	Post-lambing Feed (i.e. from 18/4 incl. that fed to twins)	1.7	0.6	14.6	-	-	£0.64
	TOTAL	113.4	44.7	42.9	-	-	£5.28 (£4.53)*

* 1974/75 costs

Total expenditure on feed for all outwintered sheep, including ewes, ewe hoggs, wethers and tups, expressed per outwintered ewe to the tup was £3.70, compared with £2.73 for the previous year.

Bodyweight loss over the tupping period was less severe than in the previous year and as a result all ewes except Alderhope were in better condition after tupping. The only ewes dosed against worms before tupping were those of Project I. Dung samples from hoggs taken during the tupping period indicated a worm burden high enough to justify dosing. On the assumption that the same would be the case with the ewe stock, all ewes except Project I were worm dosed after tupping. All outwintered sheep were dosed prior to lambing and subsequently all twin-bearing ewes and their lambs were dosed in mid-May and again in mid-June, with the twin lambs only getting a further dose in mid-July. Single-bearing ewes and their lambs are not normally dosed at marking but were this year following dung and pasture samples which indicated an exceptionally high worm larvae count. All single lambs were again dosed in late June, early July. Inwintered ewes were given a worm drench only ten days after housing and a further dose prior to lambing.

All ewes were in better condition at the start of lambing this year and bodyweight loss over the lambing period was less severe than in 1975 but was still much higher for all ewes than in 1974. With the exception of Gairs lambs which showed a considerable improvement over the year, marking weights of lambs were down a little this year. Despite the severe drought conditions which prevailed throughout the summer months lamb growth rates on the whole showed an improvement on last year, being higher for all singles except Park Law and higher for Rigg, Gairs and Park Law twins. Overall weaning weights for Project I, Project II, Alderhope and Park Law were up by 0.6 kg, up by 1.4 kg, up by 0.3 kg, down by 0.7 kg respectively. This was the first year with Blackface lambs on Rigg and Gairs and since these lambs were heavier than the South Country Cheviots, this has had a marked influence on the lamb performance figures for Project II.

Arising from a preliminary investigation into copper deficiency at Alderhope in 1975 (Farn report 1975: Sourhope) an intensive study took place during 1976. Copper values of twin-bearing ewes and their lambs were monitored during their period on the Alderhope reseeded pastures.

Initial results showed extremely low plasma copper levels in both ewes and lambs and after a period of hypocupraemia in the lambs two balanced groups, where twins were selected on weight and sex to comprise treatment and control groups were formed. One group was maintained in copper sufficiency for the remainder of the period on reseeded pasture, whilst the other was allowed to continue in copper deficiency. Significant differences were found in a range of parameters. Most significantly there was a demonstrable difference in weight gains over the period, whilst striking differences were seen in the fleeces of the two groups.

Bodyweight (kg)

	May	June	July	August	September
GROUP I*	8.5	16.6	23.5	28.0	30.0
GROUP II	8.4	16.4	22.5	26.3	27.5

* Group I lambs received copper injection in June.

Further results of this research will be reported upon in the Annual Report and it is the intention to publish the findings in the near future.

The weaning percentages for South Country Cheviot, North Country Cheviot (including NCC x SCC) and Blackface ewes were 92.2, 106.9 and 101.5 respectively to give an overall weaning percentage of 100.5 compared with 99.2 last year. Although the overall lamb crop was similar to last year there were considerable changes for some individual hefts, with Project I up from 102.7 to 108.5%, Gairs up from 87.2 to 99.0% and Alderhope down from 116.5 to 106.3%.

Fleece weights for the ewes on average were down by 0.1 kg, while for the hogs they were 0.1 kg heavier than last year. The total weight of wool graded was just 0.1% higher than last year, the average price realised being 36.0p/lb.

The study of the long term effectiveness of cobalt bullets for all Park Law ewes and the 1973, 1974 and 1975 ages of Project I ewes is continuing. In 1976, however, only hogs of Park Law are to be included in the trial, all other hogs being given a bullet.

Over the last two years a small trial examining the incidence of dwarfism in South Country Cheviot lambs has been carried out in conjunction with Dr. G.B. Young of A.B.R.O. It was suspected that a recessive gene was responsible for dwarfism and, if this was the case, then dwarfism would only occur in 1 in 4 lambs born to parents who are both known to be carrying the gene. Taking the two years together, 18 known carrier ewes were mated with the same known carrier tup. Of 14 lambs born, 4 were dwarf lambs, a ratio of 1 in $3\frac{1}{2}$ which was considered close enough to confirm the recessive nature of the gene.

Disposal of lambs

The bulk of the lamb crop was sold through the store market with Cheviot lambs averaging £0.248 per lb liveweight (top price £0.314) and Blackface lambs averaging £0.186 per lb liveweight (top price £0.245). A total of 651 North Country Cheviot lambs (and N.C.C. x S.C.C.) averaged £15.77 per head (£8.31 in 1975), 565 South Country Cheviot lambs averaged £13.98 per head (£10.01 in 1975), and 487 Blackface lambs averaged £11.95 per head (£8.74 in 1975).

In addition to the above, 40 lambs, mainly tups and chasers were put into the hogg shed to fatten. Thirty-five of these have been sold so far at an average carcass weight and price per head of 31.1 lb and £15.83 respectively. The overall average price for all 1738 lambs sold is £14.12 per head, which is a considerable increase over last year's price of £9.48.

Details of the disposal of the 1976 lamb crop are as follows:-

Ewe lambs retained as stock replacements	429
Wether lambs retained as wether stock replacements	31
Tup lambs retained for breeding	17
Lambs sold store	1703
Lambs sold fat	35
Lambs as yet unsold	5
	<hr/>
Total	2220
	<hr/>

As a matter of policy this year it was decided to sell all South Country Cheviot draft ewes through the feeding or fat markets, where they sold to a top of £18.20 and an average price of £14.28. North Country Cheviot (and N.C.C. x S.C.C.) draft ewes sold to a top of £19.00 and an average price of £18.61. Blackface draft ewes sold to a top of £18.15 and an average price of £17.01. These prices showed an even greater increase over the year than lamb prices, the overall average for draft ewes at £15.97 being almost double the 1975 price of £8.02.

Death Rate

The overall death rate of the sheep stock in the twelve months since November 1975 was 3.8%, with the death rate of ewes, gimmers and hoggs being 4.9%, 2.4% and 1.5% respectively. The overall death rate for the previous twelve month period was 3.9%.

Sheep Stock Autumn 1975

By late summer with hill pasture growth having been severely restricted due to the unparalleled drought conditions which had prevailed, and as a consequence of the high Sourhope stocking rates, it was obvious that considerable inroads had been made into the reserves of standing herbage needed to bring the ewes through to tupping and on into early winter in good condition.

Whilst the very heavy rainfall of September and October did partially mitigate the situation with pasture growth being renewed, it was only too obvious that many ewes would fail to reach their desired pre-tupping weights. Pre-tupping weights are shown in Table 3 and it can be seen that, particularly in the case of the ewes of Project I and of Park Law, their pre-tupping weights showed a big drop from last year.

Nor have conditions through tupping been good with intermittent snowfall and hard frosts persisting throughout December culminating in a heavy snowfall at the end of the year.

A total of 2980 sheep will be overwintered this year at Sourhope.

CATTLE

Cattle Stocks

Sixty-nine suckler cows were wintered at an estimated cost of £50.57 per head. Promax liquid feed was fed along with straw from late December, with silage being introduced in mid-January. On average each cow received 3.8 tons silage, 1.0 cwt hay, 6.3 cwt feeding straw, 12.8 gallons Promax and 2.2 cwt magnesium fortified hill cow cobs. The cost of all purchased feed, i.e. excluding silage, was £24.57 per head.

Calving started on 4th February and was straightforward with only 2 calf losses. The calf numbers, however, were again disappointing due to a high number of eild cows - 12 out of a total of 68 cows. Two of these 12 were known to be abortions. As was the intention referred to in last year's Farm Report, a high phosphorus mineral was fed to the cows before bulling in 1976. But, following a pregnancy diagnosis carried out this autumn, the number of eild cows is again unacceptably high.

The management of the nursing cows from April to the end of the year was again dictated by their use as "grazing tools" on the three Development Project areas. Creep feed was offered to the calves over the last 63 days to weaning. Some calf performance data for 1976 are shown in the following table: (all calves Hereford x this year) -

Sex	Nos.	Average birth weight (lb)	Average weaning weight (lb)	Average liveweight gain - birth to weaning (lb)	Average daily liveweight gain (lb)
Bullock	36	90.1	552.3	462.2	2.1
Heifer	20	83.9	525.3	441.4	1.9
All calves	56	88.0	542.6	454.6	2.0

All 56 calves weaned were sold at the October sales to average £157.30, an increase over last year's price of £55.08. The average price per cwt was £37.25 for bullocks and £30.70 for heifers.

The 2 calves kept from the 1975 crop were sold in April to average £100. The outwintering cost for the 2 calves was £47.55 per head.

MUIRBURN

No burning was carried out in the spring of 1976.

CROPPING

Forty and a half acres of grass were conserved as silage and 6 acres as hay.

Seventeen acres of inbye fields were sprayed to eradicate dockens where they had recently been spreading vigorously.

Following the crop of rape in 1975 the Rigg field was reseeded towards the end of April this year. After rotavating, 8 cwt/acre slag was applied and the field rolled. Following an application of 2 cwt/acre of a 17:17:17 compound fertiliser, 30 lb/acre of seeds mixture (Perennial and Italian Rye grasses, Timothy and Clover) was sown. Immediately afterwards the field was chain-harrowed and rolled.

BRACKEN SPRAYING

The only bracken spraying carried out during 1976 was in connection with Project I and is reported under the section headed Development Work.

BUILDINGS

Following the extension to the covered working area carried out last year the rest of the Auchope sheep and cattle handling pens has been completed with the exception of a footbath, for which provision has been made. The much improved stock handling facilities now available at Auchope will be a great asset at Sourhope as an invaluable addition to the existing handling pens at the main steading.

Extensive alterations to the hostel at Sourhope are at present under way.

DEVELOPMENT WORK

Good progress has been maintained in the Development Projects.

The only further input to Project I during 1976 was bracken spraying on 28 acres of P1 using 8 pints/acre Asulox at a cost of £13.40/acre. It is suspected that the timing of the spraying was perhaps a little late (10th to 11th August) this year after such a prolonged period of drought because some of the bracken had already begun to die off and this may prove to have impaired translocation of the chemical to the underground rhizome system. The oversowing of P2 referred to in last year's report, having been completed by the start of the dry summer of 1975, this year had to endure a more severe drought. As a result of these two successive dry summers seed establishment has not been as successful as might have been hoped. The individual ewe performance for Project I continued to improve as expected following a further rise in pre-tupping weight in November 1975. The weight of lamb weaned per ewe mated was 28.9 kg in 1976 compared with 26.7 kg in 1975 and 23.8 kg in 1974. This trend is not expected to continue in 1977, however, pre-tupping weights being down on average by 4.4 kg for November 1976.

The breed changeover on Project II from South Country Cheviot to Blackface is continuing. There were no further inputs to Project II or Project III during 1976.

D. HOUSE O' MUIRWEATHER

As has been common over the last few years the winter started well and, apart from a bad spell just before the hill lambing started, continued reasonably good into spring. The summer was exceptionally dry, particularly the second half of July and most of August. Rainfall figures are shown below.

Pastures, both inbye and on the hill, suffered as a result of this and were very bare in the latter part of the summer. Fortunately autumn rains resulted in a good end of season growth which saved the situation.

Unfortunately when the rain did come it continued for a long time and the backend of the year was very wet.

Rainfall 1975/76

	<u>Month</u>	<u>Rainfall</u> (mm)
<u>1975</u>	December	12.6
<u>1976</u>	January	68.2
	February	41.1
	March	70.7
	April	73.0
	May	61.7
	June	26.0
	July	46.1
	August	27.2
	September	73.0
	October	157.1
	November	51.0
	Total	<u>707.7</u> (27.8 inches)

The ten year average is about 810 mm.

SHEEP

The hill ewes were in good condition at mating time and tupping went well. The regular hill flock was reduced to 353 because of a research requirement on the two oldest age groups including the 1975 cast ewes. The ewes came through the winter well and no early feeding was required. The pre-lambing feeding consisted of hay and approximately 10 kg/hd of a proprietary nut containing 14% crude protein.

The marking percentage on the 353 ewes remaining as the hill stock was 127.8 and of this 126.6% were weaned.

The ewe hogs, 55 Blackface and 45 Blackface/Westphalian, came through the winter well and were returned to the hill in April. It at once became evident that the Blackface/Westphalian crosses had little or no hefting instinct and wandered indiscriminately over the three hefts, creating some degree of trouble. It was also noted that the crosses were not in as good condition as the Blackfaces at clipping time.

One hundred wether lambs were required for the wether pool in 1976 and these were wintered away from home returning in late April 1976.

Disposal of Stock

The disposal of the 447 lambs weaned from the hill stock, together with 211 lambs handed over from the various research projects (total 658), were disposed of as follows:-

Sold store	353
Sold fat	30
Sold HFRO Research Account	52
Retained for Stock Replacements	121
On hand 17/12/76	82
Deaths	20
	<hr/>
	658
	<hr/>

Store Lamb Sales

Prices obtained were as follow:-

Blackface wether lambs (top)	£14.30
Blackface wether lambs (bottom)	9.70
Blackface wether lambs (average)	12.34
	<hr/>
Blackface ewe lambs (top)	£10.80
Blackface ewe lambs (bottom)	9.00
Blackface ewe lambs (average)	10.09
	<hr/>
Cross lambs (top)	£20.90
Cross lambs (bottom)	18.80
Cross lambs (average)	19.79
	<hr/>

All cast ewes were required by Research Account.

CATTLE

Of the 21 heifers bulled in 1975, 20 were in calf and 1 was a non-breeder. This animal was sold fat. Calving was very satisfactory with 100% live calves. Additional heifers were purchased and some culling done. The current total is 37 head of heifers and second calvers.

A Charollais bull was purchased during the year and all second calvers were mated to it. The heifers were given one chance of A.I. with the Aberdeen/Angus bull and this was followed up by our own old Aberdeen/Angus bull which was sold after the mating period was over.

None of the 20 1976 born calves has yet been sold and colourwise they are a mixed lot. The old A.A. bull must have had a considerable red factor in his breeding.

BUILDINGS

1. No new farm buildings were put in hand in 1976 but a new feeding passage is currently being built in the new Dale Shed and approaches are now concreted.
2. The new cottage for the shepherd was built during the year and it is hoped to have it occupied by the end of December 1976.

FENCING AND DYKEING

Some repairs have been carried out to dykes and fences during the year and approximately 1200 yards of new fencing erected in conjunction with an area of hill currently being reclaimed.

MUIRBURN

An attempt was made to burn an area of hill which was to be reclaimed but this proved unsatisfactory due to the tufty nature of the sward.

LAND IMPROVEMENT AND RECLAMATION

During 1976 approximately 65 acres of inbye and hill were given three tons of ground limestone and seven cwt 29% GAFSA (rock phosphate) per acre.

On the hill approximately 20 acres of a predominantly Nardus sward (within the above 65 acres) were selected for further improvement and fenced. The dense mat of old vegetation would not burn in a satisfactory manner and had to be chopped off by forage harvester. The area was then rotavated three times, sown with rape and Italian Ryegrass 3.5 cwt (20:10:10) applied and then re-rolled. A reasonable, if thin, catch of rape was obtained but after coming to a height of one inch, was killed off with the drought in August which, coupled with the rather "frothy" nature of the top six inches of soil after rotavating and despite rolling, provided too dry a seed bed for the small plants.

It is hoped to sow this area out to a permanent mixture in May of 1977.

A further area of poor inbye was sprayed with Paraquat and rape drilled directly into the sward. Again the dry August seriously affected this crop and the crop was poor. This area will be re-sown with rape in 1977.

II. SUMMARY OF FLOCK RECORDS 1975/76

A. GLENSAUGH

TABLE 1

Reconciliation of Ewe Numbers

Flock	Breed	Ewes and Gimmers Nov. 1975	Cast and Cull	Deaths		Gimmers brought in 1976	Ewes and Gimmers Nov. 1976	Hoggs born 1976
				No.	%			
Cairn Birnie	B.F.	204	50	10	4.9	52	196	59
	B.F.	221	49	5	2.3	58	225	59
	Total	425				110	421	118
<u>Finella</u> East	N.C. Cheviot	155	48	2	1.3	50	150	61
Mid	B.F.	111	54	2	1.8	22	77	23
	Texel x	20	-	3	15.0	18	35	13
	B.L. x	19	-	3	15.8	20	36	13
	Total	150				60	148	49
West	B.F.	112	49	5	4.5	22	80	22
	Texel x	20	2	2	10.0	18	34	10
	B.L. x	18	2	1	5.5	19	34	10
	Total	150				59	148	42
Greyface	Flock	232	48	16	6.7	65*	233	-
GRAND TOTAL		1112		49	4.4		1100	270

* Purchased 1976

TABLE 2

Weaning Percentages and Lamb Liveweights

Flock	Breed	Ewes to tup 1975	Lambs weaned			Weaning weights (kg)		
			1976		1975	Single	Twins	Triplets
			No.	%	%			
Cairn Birnie	B.F.	204	202	99	112	25.4	21.8	-
	B.F.	221	256	116	115	24.9	22.3	-
<u>FINELLA</u> East	N.C. Cheviot	155	190	126	131	- 26.2	-	-
Mid	B.F.	110	125	114		32.1	27.7	-
	Texel x	20	25	125		34.3	30.0	-
	B.L. x	20	23	115		35.9	26.8	-
		150	173	115	119			
West	B.F.	112	112	100		27.3	22.3	-
	Texel x	20	18	90		27.6	24.7	-
	B.L. x	18	27	150		31.7	25.3	-
		150	157	105	125			
<u>Greyface</u> Early lambing Late lambing		121	165	136		36.2	30.1	-
		111	187	168		33.4	29.8	22.6
		232	352	152	151			

TABLE 3

Liveweight (kg) of Sheep - November 1975 and 1976

Flock	Breed	Ewes		Gimmers		Hoggs	
		1975	1976	1975	1976	1975	1976
Cairn Birnie	B.F.	51.5	49.7	46.1	41.1	30.4	28.6
	B.F.	55.4	47.2	43.3	38.9	31.4	30.2
<u>Finella</u> East	N.C. Cheviot	NR	67.9	NR	57.2	NR	33.1
Mid	B.F.	60.9	59.9	53.8	54.22	35.4	34.8
	Texel x	-	59.9	54.8	57.00	34.5	34.3
	B.L. x	-	61.9	57.6	56.15	33.1	32.2
West	B.F.	59.8	55.9	49.8	49.1	32.4	27.1
	Texel x	-	54.7	49.5	54.6	32.7	30.6
	B.L. x	-	56.4	54.0	54.6	33.1	33.5
Greyface		71.6	64.1	63.8	67.6	-	-

TABLE 4

Cattle Stocks - December 1976

	<u>Hereford</u> <u>x</u> <u>Friesian</u>	<u>Blue</u> <u>Grey</u>
Cows in-calf to Charolais bull	32*	36
Eild cows	5	1
Heifers in-calf to A. Angus bull	8	6
Bulling heifers	10	4
	—	—
Totals	55	47
	==	==

Other cattle

One Charolais bull
One A. Angus bull
64 weaned calves

* includes 6 transferred from House
o' Muir for experiment.

B. LEPHINMORE

TABLE 1

Reconciliation of Ewe Numbers 1975-76

Hirsel	Ewes and Gimmers Nov. 1975	Draft and Cast Ewes	Deaths*	Transfers for Experimental Purpose	Gimmers brought in	Ewes and Gimmers Nov. 1976
Barnacarry/Feorline	243**	76	8 (4)		92	251
Mid-Hill	458	101	26 (9)		121	452
Low-End C	192	42	3 (0) }	16 ⁺	59 }	399 ⁺
Low-End T	187	35	7 (5) }		64 }	

* Includes Black Loss (in brackets)

** Includes 19 x 5 crop ewes

+ 16 slaughtered on 22nd October 1976; 399 includes further 32 (Ewes and Gimmers) for slaughter in March 1977 and June 1977.

TABLE 2

Weaning Percentage 1976

Hirsel	Ewes to Tup	Lambs Weaned			Weaning Weights	
		Total	Percentage		Singles kg	Twins kg
			1975	1976		
Barnacarry/Feorline	243	186	78.4	76.5	25.1	24.1
Mid-Hill	458	418	91.0	91.3	23.8	20.5
Low-End C	192	174	81.3	90.6	26.5	23.0
Low-End T	187	175	83.9	93.6	26.3	24.7

TABLE 3

Weights of Ewes, Gimmers, Hogs (kg) 1975-76

Hirsel	EWES		GIMMERS		HOGGS	
	Nov. 1975	Nov. 1976	Nov. 1975	Nov. 1976	Nov. 1975	Nov. 1976
Barnacarry/Feorline	45.4	48.8	41.3	42.8	24.5*	26.8
Mid-Hill	48.5	50.5	43.2	45.6	27.3	26.7
Low-End C	46.4	} 47.3	40.9	} 42.4	24.3**	} 28.1
Low-End T	47.0		41.5		25.0 ⁺	

* Includes 12 bought in; ** included 14 bought in; ⁺ includes 14 bought in N.B. Low-End C. & T. Groups discontinued (October 1976).

C. SOURHOPETABLE 1Reconciliation of Ewe Numbers 1975/76

Heft	Ewes and Gimmers Nov. 1975	Draft & Cast Ewes	Deaths	Gimmers brought in	Purchases Ewe Hoggs	Hoggs Nov. 1976	Ewes and Gimmers Nov. 1976
<u>S.C.C.</u>							
Fasset	218	50	7	49	-	39	210
Rigg	242	75	15	-	-	-	152
Gairs	240	59	16	-	-	-	165
Total S.C.C.	700	184	38	49	-	39	527
<u>S.C.C. x N.C.C.</u>							
Hairney Law/Auchope	621	97	24	121	-	146	621
<u>N.C.C.</u>							
Park Law	168	26	10	36	-	43	168
<u>Blackface</u>							
Rigg	65	1	1	75	30	60	138
Gairs	65	1	1	69	35	75	132
Alderhope	255	35	8	60	-	60	272
Banks	353	66	15	76	-	71	348
B.F. TOTAL	738	103	25	280	65	266	890
FLOCK TOTAL	2227	410	97	486	65	494	2206

TABLE 2Weaning Percentages and Lamb Liveweights 1975/76

Heft	Ewes to Tup	Lambs Weaned			Weaning Weights	
		Total No.	Percentage		Singles (kg)	Twins (kg)
			1975	1976		
Rigg S.C.C.	234	207	89.6	88.5	23.5	23.3
Gairs S.C.C.	240	243	87.2	101.3	25.9	23.5
Total	474	450	88.4	94.9	24.7	23.4
Fasset S.C.C.	218	188	90.7	86.2	-	-
Hairney Law/Auchope	620	673	102.7	108.5	27.2	25.6
S.C.C. x N.C.C.						
Park Law N.C.C.	168	169	101.8	100.6	26.1	24.1
Alderhope B.F.	255	271	116.5	106.3	30.3	26.4
Banks B.F.	353	355	103.8	100.6	-	-
Rigg B.F.	65	64	-	98.5	27.9	23.3
Gairs B.F.	65	59	-	90.8	30.6	26.5
Total	738	749	109.0	101.5	29.8	26.3
S.C.C. Total	692	638	89.0	92.2		
N.C.C. (+NCC x SCC) Total	788	842	102.8	106.9		
B.F. Total	738	749	109.0	101.5		
FARM TOTAL	2218	2229	99.2	100.5		

TABLE 3

Weights of Ewes, Gimmers and Hoggs (kg)

H E F T		E W E S		G I M M E R S		H O G G S	
		November 1975	November 1976	November 1975	November 1976	November 1975	April 1976
Rigg S.C.C.	2,3,4 crop	54.2	54.3	-	-	-	-
Rigg S.C.C.	1 crop	48.7	-	-	-	-	-
Rigg B.F.	1 crop	-	52.6	48.2	48.5	32.1	32.4
Gairs S.C.C.	2,3,4 crop	56.4	57.0	-	-	-	-
Gairs S.C.C.	1 crop	51.5	-	-	-	-	-
Gairs B.F.	1 crop	-	55.5	49.3	48.5	32.8	33.2
Hairney Law/Auchope S.C.C. x N.C.C.	All ewes	60.0	55.2	50.8	46.7	35.4	34.3
Park Law N.C.C.	All ewes	58.4	56.3	51.8	50.4	34.6	37.0
Alderhope B.F.	All ewes	56.2	56.0	49.3	52.7	35.6	37.0

TABLE 4.

Wether Stock at November 1976

Year of Birth	1971	1972	1973	1974	1975	1976
S.C.C.	33	33	29	30	29	31

D. HOUSE O' MUIR

TABLE 1

Reconciliation of Ewe Numbers 1975-76

Ewes and Gimmers Nov. 1975	Returned to HFRO Research A/c	Cast Ewes	Deaths	Gimmers brought in	Ewes and Gimmers Nov. 1976
353 } 180 } 533	35	123	15	100	460

TABLE 2

Weaning Percentage

Ewes to Ran November 1975	Lanbs Weaned		
	Number	Percentage 1976	Percentage 1975
353 Regular Hill Stock only	447	126.6	124

TABLE 3

Blackface Wether Stock November 1976

Adults	Hoggs
140	-