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Hill Farming Research Organisation

Farm Reports
and
Summary of flock records

1985

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I FARM REPORTS 1985

GLENSAUGH FARM

1. WEATHER

Prolonged snow storms throughout January were followed by a period of very cold, dry weather during February. Snow returned again throughout March along with bitterly cold North Easterly winds. Throughout lambing in April the weather continually alternated between mild dry conditions and cold wet days and severe snowstorms.

Throughout the summer months rainfall was exceptional in its frequency and volume, barely two dry days could be put together throughout June, July, August and September. A dry October allowed harvest to be salvaged and the ground to dry up a little before November storms with gale force winds and severe flooding resulting in snow cover over the farm for several days with some severe frosts to quickly remind us of the early onset of winter.

RAINFALL (mm) (taken at Fettercairn)

			(50 yr mean)
1984	December	104	87
1985	January	108	66
	February	13	60
	March	72	56
	April	77	77
	May	64	60
	June	119	83
	July	120	88
	August	158	78
	September	132	89
	October	29	100
	November	135	93
Totals		1131 mm	937 mm

2. SHEEP

(a) Tupping 1984. Early November was exceptionally wet and cold with gale force winds. Milder weather followed into December allowing grass to be available until late December when supplementary feeding began. Ewes came to the tups well, the North Country Cheviot cross Shetlands proving a little slower than the other crossbred ewes to come into heat. Better conception was achieved generally this year particularly on the Cairn hirsel.

(b) Winter feeding. Cairn and Birnie Blackface ewes received supplementary feed throughout tupping with Birnie receiving some throughout mid pregnancy to lambing. Feeding levels were maintained at previous years rates with the exception of Cairn where significantly more concentrates were fed. Reduced costs of hay and concentrates therefore led to a slight reduction in the wintering costs of the ewe stocks.

The details are shown in Table 1.

TABLE 1. Winter feed of sheep 1984-85

	Hay			Concentrates			
Flock	Dates fed	Amount kg	Cost	Dates fed	Amount kg	Cost	Total Cost
Cairn	7-10/11 20/12-27/4	53.1	3.98	7/11 - 23/5	64.6	8.86	12.84
Birnie	7/1 - 26/3	12.4	0.93	22/10 - 21/5	56.6	7.76	8.69
Finella							
BF	7/1 - 27/4	49.9	3.74	7/1 - 24/4	41.9	5.75	9.49
NCC	7/1 - 25/4	40.6	3.04	7/1 - 23/5	48.9	6.71	9.75
EF BF	27/12- 15/5	84.5	6.34	27/12- 15/5	70.0	9.39	15.73
GF	27/12- 15/5	84.5	6.34	27/12- 15/5	70.0	9.39	15.73
EF NCC	24/12- 10/4	80.4	6.03	24/12- 19/5	64.2	8.80	14.83
NCCShet	27/12- 15/5	85.6	6.42	27/12- 19/5	61.9	8.20	14.62
Hoggs	8/11- 17/4	118.9	8.92	8/11- 17/4	37.4	5.12	14.04

Hay at £75 per tonne, Concentrate at £137.20 per tonne, Sugar Beet Pulp at £110 per tonne

(c) Lambing. Some 1301 lambs were born alive to the 1119 ewes put to the tup. A significant improvement on the Cairn still leaves us a long way short of the potential on this hirsel, however weaning weights were improved and the ewes were in much better condition during the season. A useful increase in the performance of the Finella Blackface ewes was also evident whilst a decrease in lambing percentage for the North Country Cheviots on Finella was observed.

Generally the performance of the crossbred ewes was disappointing with too much being left to the influence of the weather during outside lambings in late March and April, when high mortality in twin lambs was experienced.

Reproductive performance is detailed in Table 2.

(d) Wool Crop. The weight of wool graded was up on the previous year at 2970 kg. Income also increased to £2761.78 (excluding VAT). Average price/kg of 93p. This compared with an average of 90.2p/kg of graded wool for the 1984 clip.

TABLE 2. Weaning percentages and lamb liveweights 1985

Flock	Ewe Breed	Ewes to tup	Lambs weaned 1985 No.	Lambs weaned 1985 %	Lambs weaned 1984	Weaning weights Singles	Weaning weights Twins
Cairn	B.F.	253	224	88.5	63.7	29.4	26.0
Birnie	B.F.	205	195	95.1	94.6	27.3	25.8
Finella	B.F.	212	212	100.0	81.7	29.5	24.5
	E.F.B.F.	45	71	157.8	145.7	37.4	29.9
	G.F.	84	101	120.2	127.9	35.1	28.9
	N.C.C.	163	147	90.2	102.0	27.4	25.2
	E.F.N.C.C.	60	76	126.7	137.3	33.1	25.6
	N.C.C.Shet	73	95	130.1	134.1	30.1	24.5

Data collected on the genotype production efficiency experiment with regard to wool yield and quality is summarised below.

Genotypes - 36 of each breed

Fleece weights (kg)	Range	Mean
Greyface	1.8 - 3.8	2.83
East Friesland x Blackface	1.6 - 3.1	2.29
Shetland x North Country Cheviot	1.2 - 3.6	1.94

Fleece value	Range	Mean	per kg
Greyface	£1.88.5-£4.26	£3.02	1.06.7
East Friesland x Blackface	£1.72.5-£3.36	£2.49	1.08.7
Shetland x North Country Cheviot	£1.29 -£4.06	£2.27	1.17

The Friesian cross fleeces had one third of them downgraded by 20p/kg for the avoidable fault of excess straw.

(e) Weaning. Lambs after the initial bad weather at birth, recovered well and performed extremely well until late July/early August when just prior to weaning they seemed generally to go through a period of little or no growth and subsequent loss of bloom. Continuous wet conditions must have been to blame for this phenomenon which was particularly associated with the Suffolk cross lambs that were being tightly grazed.

Hill lambs generally performed better than in previous years as the weights in Table 2 show. No lambs were sufficiently fleshed to grade at weaning which took place during the week 12-16 August.

(f) Lamb Mortality. This season lamb mortality has been unacceptably high given the level of resources and attention spent on the ewes from tupping through lambing to weaning. Far too many lambs died soon after birth through chilling and starvation in the severe April snow storms. Watery mouth, possibly precipitated by the castration and tailing of lambs at birth, was much in evidence with very poor success in its treatment. Pneumonia and many unexplained sudden deaths from marking onwards were precipitated by the poor summer weather. One hundred and eighty deaths from birth to weaning is too many in any action involving housing twin bearing ewes, better supervision at lambing and later lambing for hill ewes is being implemented for 1986.

The performance of each heft is detailed in Table 3.

TABLE 3. Lamb mortality 1985

Flock	Ewe Breed	Born Alive	Deaths			%
			Birth to Marking	Marking to Weaning	Total	
Cairn	B.F.	259	22	13	35	13.5
Birnie	B.F.	224	23	6	29	12.9
Finella	B.F.	236	14	10	24	10.2
	E.F.B.F.	82	9	2	11	13.4
	G.F.	118	17	0	17	14.4
	N.C.C.	181	24	10	34	18.8
	E.F.N.C.C.	94	14	4	18	19.1
	N.C.C.Shet	107	11	1	12	11.2
Totals		1301	134	46	180	13.8

(g) Lamb Crop Disposal and Prices. All lambs were offered for sale this year through the store rings at Laurencekirk, Edzell and Aberdeen. Poor growth rates during a very wet August and early September meant lambs were not carrying the same condition as in previous dry seasons. Lambs lacked bloom, and silage aftermaths and new grass leys were soon being poached in an effort to put some condition on lambs during the prolonged wet Autumn. The details are shown in Table 4.

TABLE 4. Lamb disposal 1985

Lamb Breed	Sales	Stock Ewe Lambs	Deaths from Wean to Disposal	Total
B.F.	362	191	10	563
E.F.xB.F.	32	35	1	68
N.C.C.	69+1*	33	3	106
E.F.xN.C.C.	20	19	2	41
Suffolk X	329+13*	-	1	343
Totals	826	278	17	1121

*Still to be sold

Prices for the main breed types are summarized below in Table 5.

TABLE 5. Store lamb prices

Date	Sale	No.	Average Price £	
Suffolks - ewe and wether lambs				
22. 8.85	Laurencekirk	18	36.85	
		22	37.75	
30. 8.85	Aberdeen	126	32.00	
		50	29.60	
19. 9.85	Laurencekirk	7	31.00	
		53	28.80	
2.11.85	Edzell	53	35.30	
Total		329	32.28	Av.Price
Cheviot				
7. 9.85	Edzell	28	31.90	
		10	25.10	
		14	23.40	ewe lambs
2.11.85	Edzell	4	27.90	
		13	21.30	
Total		69	26.96	Av.Price

Table 5 (cont'd)

Blackface lambs - wether lambs

7. 9.85	Edzell	51		24.10
		89		22.90
28. 9.85	Edzell	39		24.90
		48		19.30
2.11.85	Edzell	27		16.70
		8	(Shotts)	13.20
		6	(Riggs)	14.25
Total		268		21.66 Av.Price

Blackface - ewe lambs

7. 9.85	Edzell	61	22.10
		18	18.50
2.11.85		15	12.90
Total		94	19.94 Av.Price

East Friesland cross lambs

13. 9.85	Headquarters	52 wethers	32.00

Total lamb sales 812 net £21,205 - Average Price/head = £26.11

(h) Stock Ewe Lambs. A total of 278 stock ewe lambs have been retained and will be overwintered in the Hogg Shed on slats. A summary of the body weights shows a much heavier group of Blackface hoggs in November this year but marginally poorer crossbred ewe hoggs. The housing certainly helps to produce better grown gimmers for the hill and we hope that this advantage in bodyweight will translate into more lambs per ewe.

Details are to be found in Table 2 of the summary of flock records section.

(i) Cast Ewe Prices. Pregnancy scanning allowed more ewes to be sold to advantage early on in the year. The main disposal of the cast Blackface ewes took place in September. These ewes were all broken mouthed and some were correct below. Lack of confidence during September by buyers of any sort of livestock meant very poor prices were obtained for these ewes.

Little or no flexibility to hold them at home any longer was possible due to grazing pressures, with a high proportion of store lambs being retained for further feeding and the arrival of more Greyface and Shetland cross gimmers and a new flock of Halfbreds.

Details are provided in Table 6.

TABLE 6. Cast ewe and gimmer sales

Date	Sale	No.	Breed	Average Price £
18. 2.85	Laurencekirk	10	BF	26.68
		1	C	26.68
		2	C gimmers	46.30
19. 2.85	Laurencekirk	6	BF ewes	30.00
1. 4.85	Laurencekirk	3	BF ewes	25.10
		2	C	29.35
13. 5.85	Laurencekirk	8	BF	21.50
		11	C	26.25
27. 5.85	Laurencekirk	2	BF	32.60
13. 9.85	Laurencekirk	7	Shetland X	35.00
19. 9.85	Laurencekirk	41	BF BM	15.00
		60	BF BM	12.90
		15	BF BM	12.50
		35	BF BM	12.00
		11	BF BM	12.75
28. 9.85	Edzell	10	Cheviots BM	24.00
		26	Cheviots BM	18.00
		10	Cheviots BM	15.00
		1	Cheviots BM	22.25
		7	Cheviots BM	16.75
		12	Cheviot gimmers	36.00
2.11.85	Edzell	12	Greyface BM	21.70
		13	Shetland X	21.90
		10	E.F. BM	13.70
		9	Cheviot BM	17.70
Total no. ewes and gimmers		324	Average Price	£16.85

(j) Sheep Purchases. Further expansion of the ewe genotype work required the setting up of a 80 ewe flock of Scottish halfbreds. The Greyface and Shetland x Cheviots ewes were also increased with the purchase of gimmers in Aberdeen.

Details of purchases are as follows:-

Halfbreds - Aberdeen September 1985
30 Gimmers at £90
18 Gimmers at £70
30 1 Crop ewes at £76
7 2 Crop ewes at £56

Av. Price/head = £78

Greyface Gimmers - Aberdeen September 1985
30 Gimmers at £90 = £2700

Shetland x Cheviots - Aberdeen September 1985
33 Gimmers at £68
10 Gimmers at £33
Av. Price/head = £59.86
158 young sheep purchased averaged £75.35/head

Rams - All Ex Perth
3 Blackface Shearlings - Averaged £203
9 Suffolk Shearlings - Averaged £272

(k) Tupping 1985. Very bad snow storms heralded the onset of tupping for the crossbred ewes on November 1st. Despite this atrocious start the ewes came to the tups well with very few returns in the halfbreds and Greyface flocks. The Shetland Cheviot cross ewes were noticeably slower to come to the tup.

Supplementary feeding of the ewes began on 26th November once herbage height had fallen to 3½ cms.

The Blackface tups, on Cairn and Birnie and East Friesland tups with Cheviot and Blackface ewes on Finella went out on 25 November. Heavy snow showers and bitterly cold north easterly winds were the prevailing weather conditions and storm feeding was necessary for several days.

The ewes generally are in good condition and a fairly heavy selection and disposal of older and plain ewes has been possible with the reduction in Blackface and Cheviot ewes on the Finella and their replacements with Halfbreds, and more Greyface and Shetland crosses. The current status of flocks are 7 groups of 80 ewes run on the in-bye and Finella hill. These are made up of Halfbreds, Greyfaces, East Friesland cross Cheviots, East Friesland cross Blackface and Shetland cross Cheviots mated to the Suffolk rams, in addition a Blackface and Cheviot ewe flock mated to East Friesland rams for crossing flock replacements. On the Cairn and Birnie hills 450 Blackface ewes mated pure.

3. CATTLE

(a) Breeding Cows. The 29 Blue Greys put to the Charolais bull during 1984 resulted in 27 cows calving. One calf was born dead and 1 further big bull calf was lost after a very difficult assisted calving. This cow was dried off and subsequently sold fat. One Friesian calf was purchased and fostered successfully resulting in 26 calves being weaned.

Of the 22 Luings put to the Charolais bull in 1984, 17 successfully reared calves to weaning. Two cows proved to be eild and were sold fat. Two cows died; one 11 year old with heart failure prior to calving and one 10 year old six weeks after calving with hypomagnesaemia. One cow aborted at 4 months and was subsequently sold fat. One calf was found dead at birth and a Friesian calf was successfully fostered onto its dam.

Five in-calf Luing heifers were purchased in February 1985 from Oban at an average price of £766. They all successfully calved down to the Luing bull.

Eight in-calf Blue Grey cows (3rd/4th calvers) were purchased from N.O.S.C.A. Craibstone in August. They successfully calved down in

early September with Charolais calves. These cows will be kept free from the bull over winter and come into the main herd in Spring 1986.

Calf birth weights are in Table 7 along with calf weaning weights.

TABLE 7. Calving details

		Av. Birth weights (kg)		Av. Weaning weights (kg)	
		M	F	M	F
No.	Breed Cow				
(5)	Luing Heifer	41.8		222	
(16)	Luing Cows	43.2	42.2	222	210
(25)	Blue Grey	44.6	42	226	209
(8)	Blue Grey	47	45.5	-	-

(b) Summer Grazing. Fifteen of the Luing cows with calves at foot were summered on the Cairn. The remaining old Luing cows were summered in Gladhills and Birnie and kept free of the bull ready to sell after weaning.

The remaining 26 Blue Greys with calves at foot were summered away at Mains of Allardyce until 24 September.

(c) Suckled Calves. Forty-eight home bred suckled calves were housed from 1-15 October and are to be carried through winter on a silage/barley diet.

Sixty suckled calves were purchased from Hartwood and housed on 28 October in the experimental cattle shed. These will be individually rationed and fed to achieve target liveweights at turnout in spring 1986.

(d) Cattle Sales. A total of 22 cattle were sold fat to AMMCO at Banchory. A further 100 head of store cattle were sold at Laurencekirk and Edzell in spring and autumn 1985. Twelve farrow cows were sold through Laurencekirk and Aberdeen during the year. The details are shown in Table 8 overleaf.

4. LAND USE

A total of 266 tons Magnesium limestone were applied to inbye and hill reseed areas in Spring 1985. Those fields showing pHs of 5.6 and below were dressed with 5-7 tonnes/hectare.

6.6 hectares (Woodsides) were reseeded under barley taken as arable silage in early August. A further 5 hectares were reseeded on Mid Finella hill by rotavating and direct sowing in early June. Torrential rain throughout summer led to a very poor take of grass seeds. The area was resown in late August and has successfully established. A further fenced area among the Cairn mosaics was successfully sown out during June.

TABLE 8. Cattle sale prices

Date of sale	Breed	No./Sex	Weight (kg)	Price per kg	Price per head
Sold Store			L.W.		
30.3.85	Luing	2M	379	1.05	£399
	Hereford	2H	357	93.5	£334
	Charolais	8H	330	101.5	£335
27.4.85	Charolais	15M	331	1.18	£390
	Hereford	1M	404	1.12	£453
	Friesian	3M	323	97	£313
21.9.85	Charolais	14H	409	96	£393
	Hereford	1H	382	93	£355
28.9.85	Charolais	17M	410	1.03	£422
	Charolais	15H	388	95	£369
10.10.85	Charolais	10B	376	1.13	£425
	Charolais	11H	354	1.00	£354
	Hereford	1H	355	88	£314

Overall Average Price Stores £375

Sold Fat			D.C.W.	Price per kg	Subsidy	Total Price
9.1.85	Hereford X	2H	245	1.70	£39.93	£450.93
29.3.85	Charolais X	2H	248			
		8B	322	1.75	£49.98	£579.10
26.4.85	Charolais X	3H	274	1.65		
		5B	294	1.70	£46	£519.75
19.8.85	Hereford X	2H	390(Lwt)			£380.00
Farrow Cows			L.W.			
19.8.85	2 Luing 1 B.Grey		533	68p		£366
4.10.85	9 Luings		486	55p		£262

Overall average price £288

Subsoiling of the inbye grassland has begun prior to ploughing out and reseeding in Spring 1986. Rabbit netting has been completed alongside the west and south farm boundary fences and a determined attempt has been made to reduce the resident population which exploded in Spring 1985. During the summer months some 4000 rabbits were taken off Glensaugh by snaring and shooting. Further numbers were killed using "Cymag Gas" which were impossible to estimate.

Winter Feed. Some 400 tons of pit silage treated with an additive (formic/Sulphuric Acid) were made. No attempt could be made to wilt the material due to the abysmal weather conditions during first and second cuts. Additionally some 260 bags of big bale silage were made; 50 being whole crop barley.

One hundred and twenty acres of barley straw was obtained locally at £6-8 per acre and baled using our own equipment. This will be fed to the suckler cows over the winter. A further 30 acres of wheat straw at £4/acre was baled for bedding cattle.

The sheep and goat requirements for hay were largely satisfied by the purchase of some 80 tonnes of poor to moderate quality material delivered at £65-£100/ton.

5. BUILDINGS

The portacabin from Hartwood arrived back at Glensaugh in August to ease the congestion in the existing office block, alongside which it has been sited. Fire alarms and an exterior fire escape were fitted to the Lodge in March and exterior repairs were completed to the bungalows in the Autumn.

6. EQUIPMENT

A further 4 w.d. Ford was leased in April to replace a rented 2 w.d. Ford. In addition the following items have been purchased. Susuki 4 wheel A.T.V., rear mounted 1500 kg, Fork lift, Subsoiler, grass harrows and a Bedford KB41 4 x 4 1 ton pickup.

7. GOATS

The goat project utilizes a heather dominant area of 63 ha on Birnie hill with adjacent rough grazings of 9 ha (Hardstance and woods) and 2 ha (Reseed). In addition during 1985 the billy goats were held on 4 ha of rough grazings (Small Den). These areas are used mainly for dry stock during the summer and pregnant nannies during winter. 4.8 ha of reseeded pasture (Hard Park) is utilised by lactating nannies and kids until weaning, thereafter by weaned kids and again by females at mating time.

In spring 1985 211 kids were born to 212 nannies put to the billy in autumn 1984. 193 kids were weaned by 6 September and brought into the purpose built goat shed for inwintering from 17 September.

In autumn 1985, 166 nannies were put to the billy (31 British Toggenburgs/Toggenburgs, 81 ferals, 25 Angora x British Saanen, 28 feral x domestic goatlings, 1 African Pygmy). At December 31 1985 there was a stock of 29 billies and 18 castrated males.

8. STAFF

From March 1 1985 David Nelson has been in post as resident Officer in Charge. In September 1985 Andrew Patterson was appointed Assistant Shepherd with specific responsibility for Cairn and Birnie hirsels.

SOURHOPE FARM

1. WEATHER

The sheep year started in early November with an exceptional deluge (127 mm in 36 hours) causing serious flooding of the valley bottoms. This was a good indication of the weather that was to follow for the year. The remainder of November was very wet but December was much drier, dull showery periods alternating with cool frosty ones. January was a mixed month with the first falls of snow which lay for several weeks, but never with blizzard conditions. After a dry cool February the spring months were wet and cool, giving far from ideal conditions during the lambing period. The summer weather was atrocious, it being very cool with measurable rainfall falling most days, but fortunately an Indian summer did eventually arrive throughout most of October.

RAINFALL (mm)

1984	November	243.8	
	December	57.8	
1985	January	164.0	
	February	24.6	
	March	128.4	
	April	81.9	
	May	78.7	
	June	99.0	
	July	137.3	
	August	132.1	
	September	82.2	
	October	26.1	
		1255.9	49.4 in
	Ten year mean	1007.7	39.7 in

2. SHEEP

(a) Tupping 1984. All breeding stock other than some Rigg and Gairs ewes involved in experimental work came to the tup in good body condition. During the tupping period the weather was comparatively open, with a low December rainfall following an exceptionally wet November.

(b) Winter feeding. Hoggs were introduced to feed at the beginning of December and fed until returned to their hefts at the beginning of April.

Storm feeding of hay coincided with feed blocks being put out to the ewes early in January, and sugar beet cubes being introduced a fortnight later. A change to protein cobs was made in late March. Concentrate feeding continued through lambing, ewes nursing twins being fed high protein concentrate pencils until the end of May.

A total of 74.4 kg dry matter (hay, sugar beet nuts, concentrates and feed blocks combined) was fed on average to all outwintered ewes at a cost of £8.92 per head. This compares with 73.0 kg dry matter at a cost of £9.75 for the winter of 1983/4.

With the average feed cost for all 1652 outwintered ewes and gimmers at £8.92, the range for individual hefts was from £7.95 to £10.51.

The average cost for 415 outwintered hoggs was the same as the previous year at £6.11.

Ewes from Rigg and Gairs hefts (except gimmer age) were allocated to an experiment investigating the reproductive response of Blackface ewes in different body condition to treatment with different levels of anti-testosterone serum.

Body condition was initially manipulated at pasture, and the ewes housed at the end of October to allow more precise control of feed intake, the latter being determined by experimental need. Ewes were mated indoors from November 22nd. The station became responsible for the winter feeding of these ewes from 9th January when the gimmers from these hefts were also housed.

The dry matter fed to 569 inwintered ewes was on average 141.3 kg at a cost of £13.77 compared with 129.2 kg and £13.79 the previous year. However, for experimental purposes these ewes after mating were in such varying body condition that it was necessary to split them into four groups and feed accordingly. The range of dry matter intakes and costs varied from 123.1 kg and £11.61 for ewes taken over in January in good body condition to 158.0 kg and £15.21 for ewes in very low body condition.

All Rigg and Gairs ewes were scanned in mid-February to determine foetal numbers. The level of feeding of a supplementary protein concentrate was increased as lambing approached, with a high protein concentrate (18% Cd Ptn) being fed from 13th March to twin bearing ewes at the same daily rate as the medium protein concentrate (14% Cd Ptn) being fed to the single bearing ewes.

For the inwintered hoggs feed costs were £7.28 compared with £8.00 in 1983/84.

Auchope ewes (gimmers and 1 crop) were also scanned and twin-bearing ewes fed separately with an 18% protein concentrate replacing the 14% crude protein concentrate fed to single bearing ewes, from the beginning of March.

Scanning, with the resulting ability to feed preferentially these twin-bearing younger ages, proved of real benefit. Twin-bearing ewes came up to lambing in better order and the knowledge of foetal numbers proved a real aid to lambing management.

Feed data for both inwintered and outwintered sheep are shown in the following tables, the feed items being costed as follows, with 1983/84 prices in parenthesis.

	Per tonne £	Per tonne £
Hay	66.00	(67.50)
Green keil*	153.95	(163.00)
Ewebol cobs**	146.46	(165.40)
Ewebol pencils	143.83	(156.92)
Super ewebol pencils***	152.13	(190.22)
Sugar beet pulp cubes	130.21	(146.00)
Ewe and lamb food	198.00	(199.50)
Lamb supplement pencils	161.00	(160.29)
Barley	138.00	(149.57)
Colborn feed blocks	208.60	(206.57)
Rumevite H.E. blocks	184.00	(184.79)
Special tup feed	174.00	(182.50)

* Mixture of dried molasses, sugar beet pulp and dried grass with added minerals, in cube form.
** Concentrates fed to outwintered ewes in cob form, to inwintered ewes in pencil form.
*** Super ewebol pencils fed to twin-nursing ewes, post lambing.

TABLE 1. Hogg feed data

	Hay kg	Green keil kg	Ewe cobs or pencils kg	Ewe and lamb food kg	Av. cost per hogg
Outwintered	21.6	28.9	1.0	0.5	£6.11 (£6.11)*
Inwintered	52.0	24.5	-	0.4	£7.28 (£8.00)*

*1983-84 costs

Total weight dry matter fed: Outwintered 52.0 kg
Inwintered 76.9 kg

Total expenditure on feed for all outwintered sheep, i.e. ewes, gimmers, ewe hoggs and tups, expressed per outwintered ewe to the tup was £11.08. When outwintered wethers are included, this figure becomes £11.76 per ewe mated.

(c) Lambing. The normal pattern of bodyweight loss occurred between pre-tupping and the onset of winter feeding. Ewes responded well to

TABLE 2. Ewe feed data

		Hay kg	Feed blocks kg	Beet pulp kg	Concs. kg	Av. cost per ewe
Outwintered ewes and gimmers	Storm feed to 28/2 incl	12.2	3.1	13.4	-	£3.17 (£3.68)*
	Pre-lambing feed 1/3 to 16/4 incl	8.4	2.0	10.1	10.4	£3.77 (£4.12)*
	Post-lambing feed from 17/4 incl that fed to twins	2.7	0.5	0.1	11.5	£1.98 (£1.95)*
	Total	23.3	5.6	23.6	21.9	£8.92 (£9.75)*
Inwintered ewes and gimmers	Pre-lambing feed to 16/4 incl	71.2	-	26.0	18.9	£10.84 (£10.64)*
	Post-lambing feed from 17/4 incl that fed to twins	9.0	-	3.6	12.6	£2.93 (£3.15)*
	Total	80.2	-	29.6	31.5	£13.77 (£13.79)*

*1983-84 costs

Total weight dry matter fed: Outwintered 74.4 kg
Inwintered 141.3 kg

pre-lambing feed and entered the lambing fields in very good condition. The cool wet weather which persisted throughout almost the whole of the lambing period - in marked contrast to the almost ideal conditions of the previous year - resulted in the Macam lamb warming box once again proving to be a most valuable acquisition. Notwithstanding the adverse weather conditions, the eventual outcome was a very successful lambing, with 732 pairs of twin lambs being subsequently present at "marking-time".

The inwintered ewes from the Rigg and Gairs hefts were again lambed in the inwintering sheds.

(d) Wool crop. Ewe and hogg fleece weights were similar to those of 1984 with the total weight of graded wool from the station being 5,382 kg at an average price of 106p/kg. This compares with 5,514 kg and 97p/kg in 1984. Total wool receipts showed a rise of £398 or 7.4% from the previous year.

(e) Weaning

(i) Performance. Despite the atrocious summer weather the marking and weaning weights were on average similar to those of 1984 with 51 more lambs weaned. Grass keep was far more abundant than during the dry summers of the previous two years. Weaning percentages for South Country Cheviot, North Country Cheviot (including NCC x SCC) and Blackface ewes were 100.5, 121.6 and 127.0 respectively, to give an overall weaning percentage of 122.6, which sets a new record for the highest overall weaning percentage ever recorded at Sourhope.

A detailed breakdown, by heft, of weaning percentages and weaning weights is given in Table 3.

(ii) Disposal of lambs. 1,570 lambs were sold store (592 Blackface, 758 NCC x SCC, 108 BF x Cheviot and 112 South Country Cheviot).

Average prices realised in the sale ring for these were:

Blackface	£27.69 per head at an average of 87.1 pence per kg liveweight (£30.56 and 92.3 pence per kg in 1984).
Cheviot - NCC x SCC	£32.38 per head at an average of 114.3 pence per kg liveweight (£30.41 and 106.1 pence per kg in 1984).
BF x Cheviot	£28.83 per head at an average of 98.5 pence per kg liveweight (£30.63 and 103.6 pence per kg in 1984).
South Country Cheviot	£31.83 per head at an average of 107.3 pence per kg liveweight (£28.46 and 101.9 pence per kg in 1984).

Sixty-seven Blackface lambs were sold to HFRO (Animal Nutrition, Grazing Ecology and Animal Production Departments) at an average of £27.90 per head. Eighteen twin Blackface ewe lambs were sold (with dams) at two weeks of age to HFRO Animal Production Department. In addition 14 unthrifty (shott) lambs were sold locally for £8.43 per head.

The overall average for the above 1,651 lambs sold was £30.04 per head which compares with an average of £29.63 per head for comparable sales in 1984.

One hundred and fifty-five Blackface lambs were finished off grass and averaged £28.84 per head.

Three hundred and nine Blackface lambs (including 26 'tup and chaser' lambs) were retained for finishing indoors, of which a total of 211 lambs have so far been sold at an average price of £30.60 per head.

TABLE 3. Weaning percentages and lamb liveweights

Flock	Ewes to tup	Lambs weaned			Weaning weights	
		Total number	Percentage 1984	Percentage 1985	Singles kg	Twins kg
S.C.C. Fasset	202	203	117.0	100.5	27.8	24.4
N.C.C.xS.C.C. *N.E.H.L./ Auchope	667	806	117.3	120.8	26.5	26.3
N.C.C. Park Law	149	186	136.4	124.8	28.5	25.1
Total N.C.C.+ (N.C.C.xS.C.C.)	816	992	120.9	121.6	26.9	26.0
B.F. Alderhope	293	370	132.5	126.3	31.3	25.7**
B.F. Banks	341	401	115.8	117.6	-	-
B.F. Rigg	269	356	116.0	132.3	30.4	27.4
B.F. Gairs	300	401	130.7	133.7	31.1	29.6
Total Blackface	1203	1528	123.5	127.0	31.0	27.7
Station Total	2221	2723	121.9	122.6	-	-

* NEHL = Near End Hairney Law

** These lambs were involved in an experiment concerned with "Copper supplementation of lambs being nursed and grazed on reseeds known to induce Copper deficiency". Allowance must be made therefore - in making any comparison with the weaning weight data of 1984 - that 1/3rd of these lambs (control group) had received no remedial copper supplementation in 1985 up to weaning, with the result that their average weaning weight was significantly depressed (> 2.0 kg).

A summary of the disposal of the 1985 lamb crop is as follows:

Ewe lambs retained as stock replacement	552*
Tup lambs for breeding	16
Lambs sold 'finished'	366
Lambs sold to HFRO	85
Lambs sold store	1584
Lambs as yet unsold	98
	2701

*Excludes purchased stock ewe lambs

It was necessary to purchase 20 South Country Cheviot ewe lambs from Skelfhill this year. This was because one age group of Fasset ewes were tupped in November 1984 by a Blackface tup as the result of a scrapie problem, and another group crossed with a Hill North Country Cheviot to produce Cheviot tup lambs for Project I.

Indoor finishing of lambs on Green Keil and hay continued with the housing of 220 Blackface lambs in autumn 1984. There was one death (pneumonia) and all lambs graded. On average the finishing period extended to 43 days with lambs reaching an average dressed carcase weight of 16.5 kg. Valuing these lambs at housing at 75 pence per kg liveweight, then with all feed and veterinary costs deducted, a surplus of £2.18 per lamb was obtained.

Autumn work on the finishing of lambs indoors on a Green Keil/hay diet was continued, 168 Blackface lambs being so fed. In addition a small trial is being carried out in conjunction with BOCM, using diets based on a commercially developed BOCM/Silcock lamb finishing pellet. This involves the feeding of two diets, each to a group of 24 lambs, the two diets being identical in all respects other than their content of magnesium. The incidence of development of urinary calculi in lambs as between the two diets is being assessed. The opportunity is being used at the same time to compare the efficacy for indoor lamb finishing of a commercial finishing pellet to that of the Green Keil/hay diet used successfully at Sourhope.

(f) Draft and cull ewes. In the spring and summer of 1985 thirty-three Blackface ewes have been sold to HFRO (Animal Production and Grazing Ecology Departments) at an average of £27.80 per head. In addition 9 ewes with young female twin lambs were sold to Animal Production Department for £70 a set.

Details of the autumn sales of draft and cull ewes are as follows. [This sale data includes ten young sheep kept as stock ewe hoggs in 1984].

	£/head
60 Cheviot draft ewes 6½ years old (F.W.)	22.50
47 Cheviot draft ewes 6½ years old (warranted below)	24.00
124 Blackface draft or cull ewes (HFRO Anim. Prod. Dept)	27.50
22 South Country Cheviot draft ewes sold to ABRO	24.00
129 draft or cast Blackface and Cheviot ewes sold fat	24.68
6 unthrifty (shott) ewes sold locally	6.00

There are 39 ewes remaining to be sold.

(g) Death rates, veterinary treatment. The overall death rate of the sheep stock in 1984/85 has been 2.2%, with the death rate of ewes, gimmers and hoggs being 2.7%, 1.3% and 1.3% respectively.

The overall death rate in 1984 was 3.2%.

The entire sheep stock was worm drenched in the autumn, inwintered stock being re-dosed at housing. Outwintered stock were again dosed just before lambing. Twin lambs were dosed first at marking and then at 3-4 weekly intervals throughout the summer until weaning. Single lambs were dosed at marking, mid-July and at weaning.

Because of the wet, cool weather in late March/early April it was only possible to dip the Auchope, Banks and Alderhope hefts against ticks pre-lambing. The entire sheep stock were dipped with a scab approved dip in late July/early August and again in October. All Blackface lambs were treated around and between their horn buds, twice during the summer with Cypor to prevent headfly attack. Rigg and Gairs single lambs were also sprayed with a small amount of Cypor down their backs in late May because of a moderate tick infestation. This proved most effective.

During October all ewe hoggs received their first, and 3 year old ewes, their second cobalt bullet. All sheep stock (except some Rigg and Gairs ewes on a HFRO veterinary trial) received a booster vaccination of 4 ml Heptavac-P before lambing. In the autumn all retained stock ewe lambs received an initial 4 ml vaccination of Heptavac-P (combined 7 in 1 clostridial plus pasteurella vaccine) at weaning and a 4 ml booster six weeks later. All sale lambs received 2 ml of Ovivac-P vaccine (pulpy kidney, braxy, blackleg, tetanus and pasteurellosis) at weaning and a 2 ml booster six weeks later. This practice of giving lambs clostridial and pasteurellosis cover has proved very popular with buyers at store markets and is, we believe, reflected in the prices being paid.

A copper trial on Alderhope ewes was started in autumn 1984. One third of the ewes received copper oxide needles, one third a Cosecure bullet (Co, Cu and Se) and the remainder were untreated. All twin lambs born on Alderhope in spring 1985 were grazed on Alderhope reseeds, and a Cosecure bullet having become available for lambs, a comparison of the two methods of copper supplementation (copper oxide needles v. Cosecure bullet) was made. Approximately one third of the lambs were used as controls and received no copper. Regular weighings and blood samples were taken from ewes and lambs.

This autumn all Rigg ewes (except gimmer age), plus 80 draft age Blackface ewes and 20 cast Blackface ewes, have been allocated to an experiment investigating the effect of feed intake levels and body condition score on the reproductive performance of ewes passively immunised against testosterone. Body condition was initially manipulated at pasture, with the ewes being housed at the beginning of October to allow more precise control of feed intake. Following the injection of the appropriate dose of serum mid-November, the ewes have been subsequently mated within the house from November 21st. The draft and cast ewes which were represented equally in all intake/condition/immunisation categories were slaughtered 18 days after the start of mating and the reproductive tracts recovered.

The serious eye trouble which affected the ewe stock during the previous couple of winters fortunately abated considerably last winter with only a few cases reported, which quickly responded to treatment with antibiotics.

(h) Tupping 1985. The dry and sunny October weather greatly benefited the ewe stock which came to the tup in good body condition, with weights and condition scores, for most hefts, higher than those of autumn 1984.

3. CATTLE

The suckler herd comprised 37 cows, 7 in-calf heifers and 7 bulling heifers in December 1984. The herd has been managed in the usual manner, being used extensively as a means of grazing control on the Development Projects and other areas.

(a) Winter feeding. High magnesium cow cobs were introduced in December and fed at 1.0 kg per day until the end of May. The herd was fed straw initially (supplemented with Granstock) and then hay before a change to silage feeding was made.

Total feed costs (52)

			£
Hay	20.14 tonnes at £ 66.00/tonne	=	1329.08
Cow cobs	11.16 tonnes at £167.17/tonne	=	1833.09
Straw	17.20 tonnes at £ 34.50/tonne	=	593.33
Granstock	685 litres at £ 0.40/litre	=	274.00
			4029.50

Cost per cow excluding silage = £77.49

(b) Calving performance and calf growth. Two cows were barren and two heifers were found to be freemartins. A total of 40 calves, including one pair of twins, were born in spring, and one cow gave birth to a calf in autumn, to give a total of 41 calves born in 1984/85.

Over the five weeks prior to weaning and sale, all calves were offered creep feed. Some calf performance data (excluding the autumn born calf) are given in Table 4.

TABLE 4.

Breed	Numbers	Average birth weight kg	Average weaning weights kg	Average LWG birth-weaning kg	Average daily LWG kg
Bullock	28	38.8	300.8	262.0	1.09
Heifer	12	37.3	287.4	250.1	1.02
All calves	40	38.3	296.8	258.4	1.07

TABLE 5

	Number sold		Weights* kg		Price per head £		Price per kg £	
	1985	1984	1985	1984	1985	1984	1985	1984
Bullocks	24	9	306	289	340.83	344.33	1.11	1.16
Heifers	6	8	291	272	300.00	270.25	1.03	0.99
Overall	30	17	303	281	332.67	304.18	1.10	1.08

*Weights given are those at sale ring entrance
10 stirks are being overwintered, in addition to the late-born calf

(c) Calf disposal. Thirty Hereford X suckler calves were sold at the October sales to average £332.67, an increase of £28.49 over that obtained in 1984 for the Hereford X calves.

(d) Replacement. During the summer and autumn 3 cast cows and the 2 freemartin heifers were sold. In April 7 Aberdeen Angus x Friesian bulling heifers were purchased and put straight to the bull.

Thus the herd at the close of the year comprises 39 cows and 14 in-calf heifers. The majority of cows have been run with a Charolais bull, kindly made available by Redesdale Experimental Husbandry Farm, whilst all heifers and one or two of the cows are in calf to a Hereford bull.

4. LAND USE

(a) Conservation. A total of 19.4 ha of grass has been ensiled, of which 4.8 ha was conserved as 'big-bale' silage. In addition 4.9 ha of grass was won as hay.

(b) Reseeding. The 3.2 ha of Lower Cocklaw field (Park Law) required some remedial drainage work, after completion of which the ground was rotavated and directly reseeded. A very good take of grass and clover has been achieved.

(c) Fertiliser, lime, etc. Over and above routine fertiliser usage, and on the basis of soil analysis data, lime has been applied to a total of 16.8 ha of inbye land, at a rate of either 3.75 tonnes or 5.0 tonnes/ha of Ground magnesium limestone, according to area. In addition 10.5 ha of inbye ground has been top-dressed with muriate of potash this autumn, at a rate of 185 kg/ha.

(d) Drainage. Routine maintenance work on both existing field and hill drains has been carried out, and in addition the essential work of maintaining the drainage systems associated with in excess of 8,400 metres of hill road has gone on throughout the year, whenever an opportunity arose.

(e) Fencing. No new fencing has been erected, only routine maintenance work having been carried out through the year.

5. HILL ROADS

(a) Banks road. Reference was made in last year's report to the extensive damage to the drainage system of this road occasioned by the exceptionally heavy rainfall of the weekend of November 3rd and 4th 1984 (127 mm in 36 hours).

Work was put in hand in early March (1985) to infill and make good those parts of the road drain which had been scoured out, and at the same time to install additional cross-drains. A combination of heavy rain and lying snow however, forced the work to be abandoned to prevent further damage to the road surface. It was in early June that work was restarted and taken to completion. A total of 305 tonnes of whinstone rock from local quarry - in specific sizes ranging from 460 mm (18") 'rock', down to 150-200 mm (6"-8") 'gabion' size material was used, together with 830 tonnes of material quarried on-site at Sourhope. In addition 14 new - 610 mm (24") diameter cross drains were installed down the length of the road.

(b) Fasset hill road. A significant improvement to the safe use of this hill road along the Fasset hill, by tractors and trailers, has resulted from the widening of the very sharp turning point where this road turns back upon itself and leads on to Auchope. This work was completed in June.

(c) Main road access down to Steading, from public road. In late autumn 1984, Roxburghe Estates decided to cut down the very old elm trees which lined the narrow - and in parts steep - main access road down to the steading, the trees no longer being considered safe. The trees having been cut down, the opportunity was taken to widen the road and so immeasurably improve the safe-use of this road, particularly for heavy lorries. A variety of hardwood trees have since been planted to replace the elms.

(d) Auchope road. The hill road linking Auchope house and steading to the entrance to Auchope hay field, has been remade, making its use by tractors and trailers much safer. Drainage work to ensure removal of water from the road, is not yet complete.

6. BURN

It was noted in the previous report that over a stretch of some 90 metres along the course of the main Sourhope burn, there was a need to remove an accumulation of rock and gravel so as to restore the burn to its original course. This has been done.

7. BRIDGES

(a) New bridge rails have been erected at each of the two bridges lying within the steading complex of Sourhope.

(b) In the course of winter, the bridge linking the hill track from Fasset hill to the Gairs hill collapsed. Prior to its replacement - which will be carried out by farm staff - essential drainage work to improve the site has been carried out.

8. BUILDINGS

Apart from routine repair and maintenance work, no new building work other than the erection of a new hay-storage shed on Fasset hill, has been carried out.

Paintwork has been restricted to the exterior re-decoration of the Sourhope hostel, with all woodwork and walls treated, the latter with two coats of weathershield.

Detailed plans for the alteration of an existing building at Sourhope, to provide housing for two bulls, an additional 'loose court' for stirks, or other stock, together with a small feed store have been drawn up. Estimates have been sought and are awaited from contractors.

9. EQUIPMENT

Purchases have been made as follows: In July a new Ford 6610 - 4-wheel drive tractor was purchased on a lease-hire basis as a replacement for the existing Ford 6600, and in autumn a replacement Fahr Turbomower was obtained on very favourable terms.

A Vacuum Tanker, purchased in spring has made the task of emptying the 'dipping baths' and safely disposing of the used dip away from any water course, very straight forward. [With the burns at Sourhope contributing to the headwaters of the Tweed, via Bowmont and Till, this is important].

In concluding this report of a year not without its difficulties - but one in which Sourhope stock yet again have maintained a high quality as evidenced by sale ring prices - reference will be made to the Cheviot sheep breed.

As far back as 1968 the decision was taken at Sourhope to move away from the traditional South-Country Cheviot hill sheep, with the introduction of Hill North-Country Cheviot blood. Over the intervening years the 'Cheviot' lambs so bred have increasingly commanded the interest of buyers in the store market, who have been willing to pay a significant premium for them. The result today is that largely through these 'market place' pressures alone, increasing numbers of South-Country Cheviot hill sheep men are now following suit and introducing Hill North-Country Cheviot blood.

This report would be incomplete without reference being made once again to the unsparing efforts of all the staff here at Sourhope, throughout the year, in contributing to whatever success may be attributed to the 'output' of this hill research station.

HOUSE O' MUIR FARM

1. WEATHER

The torrential rain of November 1984 abated slightly, giving way to more broken weather in December, though there were no frost or snow problems until January.

Moderately heavy snow fell in early January, making storm feeding necessary for about two weeks. February was undoubtedly the driest month of the year (see table) though there were very few dry days from then until late September. Throughout lambing there were squally showers often sleet and temperatures generally low.

With the exception of a few very good days at the end of May/beginning of June there was no summer at all. Perpetual rain, occasionally very heavy, dominated the summer and made all aspects of farming very difficult, principally fodder conservation.

October and November were drier than average and with a bit of late growth, cattle could be held outside until the beginning of December on higher fields where poaching was not a problem.

RAINFALL (mm)

1984	November	193.8	
	December	62.6	
1985	January	32.6	
	February	17.8	
	March	95.2	
	April	84.1	31 yr average 46.6
	May	49.4	
	June	68.1	
	July	177.1	31 yr average 74.8
	August	114.2	
	September	166.8	
	October	28.4	
	November	59.6	31 yr average 85.3

2. SHEEP

(a) Tupping 1984. A total of 488 ewes were put to the ram in November 1984. This shows a decrease from 1983, partially to accommodate experimental requirements and also to reduce stocking density on the front heft which had suffered most during the drought summer of 1984. As in previous years, 50 non-experimental ewes, running the Market Park, were mated with a Suffolk ram.

The weather at the beginning of tupping was very wet though this gave way to showery windy conditions and there was no snow until the rams had come in.

(b) Winter feeding. The ewes were in good condition when put to the ram.

As with preceding years the levels varied within and between the three hefts, but the average cost/head was as follows:-

Concentrate	600 g/day @ £158/tonne	£5.62
Hay	800 g/day @ £ 85/tonne	3.85
Total		£9.47

(c) Lambing. After a bad start, due to a higher incidence of pregnancy toxaemia, and hypocalcaemia than usually experienced at House o' Muir, lambing generally went very well in spite of very wet, sleety conditions. Six hundred and twenty-nine lambs were marked, maintaining the same performance achieved in 1984 (see Table 1).

TABLE 1. Weaning percentages

Group	Ewes to ram November 1984	1985 No.	1985 %age	1984 No.	1984 %age
Hill	438	542	124	556	125
Market Park	50	82	164	82	164
All Groups	488	624	128	638	128

(d) Lamb disposal. Surprisingly, ewes and lambs did well in the very wet weather and the 624 lambs weaned were disposed of as follows:-

Wedder lambs sold store	130
Wedder lambs sold fat	190
Ewe lambs sold to Research	88
Ewe lambs sold at Mart	60
Replacements	125
Wedders sold to Research	30
Deaths	1
	624

Wedder lambs sold store:- 80 Top Draw @ £29.80
50 Second @ £28.60

Small ewe lambs sold at:- 30 @ £23.80
30 @ £22.80

Lambs sold fat at Biggar averaged £28

Average price for cast ewes was £15

Due to the extremely wet summer and the shortage of keep, sheep sales were down somewhat in all departments on 1984.

(e) Ewes. Ewes were disposed of as follows:-

Regular drafts sold to	Research	25
	Cast	40
		65

(f) Ewe hoggs. As is regular practice the ewe hoggs were away-wintered on aftermath and undersown stubble and returned to House o' Muir at the beginning of March where they received 4 weeks training for box feeding. They were then hefted onto the hill before lambing started.

The cost of hay and concentrate was £3.90/head.

(g) Wool. The wool clip was very good and heavier fleeces meant that income remained at 1984 levels with fewer ewes on the hill and fewer hoggs.

1984 £2003
1985 £1995

3. CATTLE

Of the 45 autumn calvers on hand at November 1984, 14 with calves at foot were in-wintered and joined with a Charolais bull on 1 February 1985. They were subsequently transferred to Hartwood in early summer after weaning.

The remaining 31 were bulling heifers running with an A.A. bull in the "Daisy Dell". Though the bull appeared to be working normally, at P.D. scanning in early February, it was discovered that only 2 heifers were in calf. Subsequent veterinary examination showed the bull had a very low sperm count and was quickly despatched to the Abattoir.

An A.A. bull was hired and the remaining 29 heifers were re-bulled as a spring-calving herd and are still at House o' Muir and due to calf in January/February 1986.

Of the 13 spring calvers on hand in November 1984, 10 were AA/Friesian in-calf heifers which calved January/February 1985 and were transferred to Bronydd Mawr with calves at foot at turnout.

The 3 remaining heifers, 2 B/Grey and 1 Hereford were transferred to Hartwood for mating with a Charolais bull.

In October 1984, 10 B/Grey in-calf heifers were purchased. These were in-calf to a Limousin and calved during November.

A further 10 H/Friesian heifers were transferred from Hartwood with calves at foot and together with the 10 B/Greys will be mated with a Charolais bull on 1 February 1986.

The wintering costs were as follows:-

Bulling heifers - outwintered in "Daisy Dell"

Barley straw	£12.00
Silage	-
Concentrate	22.50
Total/head	£34.50

Autumn-calvers with calf at food - inwintered

Silage	-
Barley	£14.50
Concentrate	30.00
Total/head	£44.50

Calf Disposal

On hand December 1984	11	Spring born
	14	Autumn born
	25	
	13	Sold
	12	On hand December 1985

Prices Attained

No.	Breed	Sex		Price/head
3	AA x	Bullocks	@	£416
1	AA x	Bullocks	@	£390
2	AA x	Heifers	@	£390
2	AA x	Heifers	@	£365
5	AA x	Heifers	@	£345

4. LAND USE

(a) Fodder Conservation. A total of 400 tonnes of good quality silage were made. This was achieved in two cuts:- one of 10.5 ha and a second cut of 6 ha approximately. The quality of the silage made was extremely good, taking into consideration the prevalent weather conditions, though some damage to pasture by machinery was unavoidable.

A further 8.1 ha of hill reseed at Turnhouse was closed off after lambing to make hay. This was resown with a little optimism, in early August, but by early September the hay had not seen a 24 hour period without rain and serious damage to the reseed had to be prevented. The equivalent of 3,500 bales was therefore made into big bales and clumped in an old quarry.

Although making big-bale silage was considered, the maturity of the crop and the obvious value of making hay of any quality held sway in favour of haymaking.

(b) Reseeding etc. The 1.8 ha steading field which was sown with rape in 1984 was returned to grass early in the summer of 1985 after chisel-ploughing and spraying for dockens.

After cleaning away the extremely old set of handling pens at Turnhouse a further 4.1 ha area was direct reseeded and fenced by farm staff providing a further area for stock management or conservation.

(c) Fencing/Drainage. The March fence from the A702 to Carnethy, a total of 1255 metres, was replaced at joint cost with Penicuik Estate.

A further 500 metres of internal fencing was erected by farm staff. Some old drains between the Knowes and the Daisy Dell had to be replaced or repaired to clear a boggy area, which was becoming hazardous to sheep and cattle.

(d) Acquisitions. A rough-terrain fork lift truck was acquired in the spring of 1985 to be shared between the Sheephouse complex and House o' Muir.

HARTWOOD FARM

1. WEATHER

1985 must be classed as one of the worst years on record and yet it will be seen from the rainfall figures that the total was only about 50 mm (2 inches) more than average.

The problem was that the rain fell at the wrong time. July, August and September accounting for approximately 50% of the total. Even at other times, although rainfall was not unduly heavy, it was persistent and there were very few days with drying sun or wind.

As a result all farm work and to some extent the research programme was extremely difficult. Hay and harvest were almost impossible, silage was made in quantity but quality very much lower.

Several fields were badly tracked and will require reseeding.

The wet weather had a distinctly adverse effect on lamb and calf growth rates.

RAINFALL (mm)

1984	November	187.2
	December	84.5
1985	January	48.0
	February	24.9
	March	67.3
	April	70.0
	May	50.5
	June	64.6
	July	193.8
	August	189.4
	September	223.2
	October	45.1
		1248.5 mm (49.1 ins)

2. SHEEP

(a) Mating 1984. The weather was about average for the time of year. Rams went out on 25th October to all ewes except the commercial non-experimental group which were mated on 1st November.

(b) Winter feeding. The Systems and Systems Demonstration flocks were accommodated in the big wooden sheep shed on slats. The Reproductive Performance Study Group was housed in the plastic sheds which have now been converted to slats. A small nutritional study flock was also housed in the plastic shed. Housing took place later than desired since the sheds needed cleaned out after another experiment. Housing therefore took place on 10th January. Silage was fed ad-lib.

Prior to housing all ewes, gimmers and hoggs were fed concentrate up to 300 g/hd/day.

Wethers and rams were off wintered in woods on ad-lib silage.

Details of the various sub-flocks are given below.

(i) Reproductive Performance Study GF (126). This flock was mated on 25th October and oestrus was synchronised. Ad-lib silage was fed on housing at 10th January till 1st March. Concentrate was also given at 200 g/hd/day. Silage consumption was measured at 3.25 kg/hd/day.

This group was scanned on 24th January. Pre-lambing feeding was carried out according to foetal number and hay was fed at 1 kg till lambing after the withdrawal of silage. Concentrate quantities varied from 570 g to 1000 g/hd/day.

After lambing this flock was used on a clean/dirty grazing experiment to control herbage height.

(ii) Nutritional Study Group GF (48). This flock was also mated on 25th October and oestrus was sychronised. These sheep were housed on 10th January and were treated in the same way as the flock in (i) above.

(iii) Systems Study GF (240), Demonstration Flock (60). Prior to housing on 10th January most groups were fed hay whilst all ewes received concentrates at either 150 g or 300 g per head per day. On housing silage was fed ad lib, intake varying between 2.5 kg and 3.5 kg per head per day. Concentrates were fed at 150 g/hd/day till 6 weeks before lambing (20th March), when feed levels were increased according to foetal number and expected lambing date. Hay was substituted for silage in the pre-lambing period.

(iv) Blackface Wethers (73). The flock was wintered in woods and fed ad lib silage and 100 g barley/hd/day till turn out in April. Numbers were reduced in June when 13 were transferred to HFRO Headquarters.

(v) Non Experimental GF (347). These ewes were wintered on various parts of the farm, Railway field, Greengate, Strip, Milligans and Rosehall Glen. Silage was introduced in mid December and 200 g/hd/day concentrate was fed. The ewes were moved to Rosehall Roundell and Rosehall for lambing by which time concentrates were being fed at 1000 g/hd/day. Almost one third of this flock were gimmers lambing for the first time.

(vi) Blackface Ewe Hoggs (80). Winter feed commenced at the end of October with 300 g/hd/day concentrate being gradually introduced. The flock was housed on 8th January in the small plastic shed and concentrates were fed at the same levels starting at 500 g and rising to 750 g/hd/day. The concentrate was a 1:1 barley:oat mixture.

(vii) Blackface Gimmers (72). This flock was housed in the large plastic shed on the 5th February but was turned out again on the 22nd February when the water pipes became frozen. In the house 900 g of hay was fed with 200 g of barley/oat mixture to single bearing ewes, and 350 g to twin bearing ewes. On being turned out to the Moor Paddocks 900 g of hay was fed and 460 g of barley/oat mixture. This was increased up to 650 g before lambing when the flock was rehoused in the big shed when space became available.

(c) Lambing. The weather in late March was cold and wet and heavy snow was experienced at the beginning of April accompanied by strong winds. This caused considerable lamb losses in the non-experimental flock which was lambing outside.

Lambing Performance

Sub Flock	Mating Date	No. Mated	% Lambs Born*
Nutritional Study	25/10/84	48	142
Reproductive Performance	25/10/84	126	176
GF Systems	25/10/84	240	170
Systems Demo	25/10/84	60	183
Non Experimental	1/11/84	347	137

*alive and dead

(d) Wool Crop

	Average Wool wt (kg)
Greyface ewes and gimmers	2.70

(e) Weaning

At lambing two new flocks were created for the purpose of pasture worm monitoring. Ewes for these flocks were selected from the Systems Demo, Nutritional Study and Reproductive Study groups, the remaining ewes then joined the other ewes on the farm not on experiment.

(i) Performance

		Weaning %
Nutritional Study	48)	
Reproductive Peformance	126)	
Systems Demo	60)	134
Balance of Ewe Stock	347)	
Systems	240	145

(ii) Disposal of Lamb Crop to Date

				Av. Price/Head
Sold Store				
1/4/85	HFRO Animal Nutrition Dept	6	Down x	£20.00
12/4/85	Lanark Market (motherless lambs)	5	Down x	£ 7.00
17/4/85	HFRO Animal Nutrition Dept	1	Down x	£20.00
20/9/85	Hamilton Auction Market	156	Down x	£31.62
18/11/85	Hamilton Auction Market	149	Down x	£32.33
20/10/85	HFRO Grazing Ecology Dept	48	BF	£24.00
	Total Sold Store	365		
Sold Fat				
22/7/85	Biggar Beef	12		£31.42
27/7/85	Biggar Beef	82		£37.95
9/8/85	Biggar Beef	117		£34.54
5/9/85	Biggar Beef	80		£37.07
18/9/85	Biggar Beef	68		£33.01
2/12/85	Biggar Beef	131		£36.94
	Total Sold Fat	490		

(Balance of lambs are on forage crop)

(f) Draft and Cast Ewes (not including a few to HFRO Research A/c)

161 GF ewes sold as partly correct or feeders..Av. Price/hd..£31.50

In addition 7 ewes suspected Jaegsiekte were sold to MAFF Lasswade for £25 each and 1 casualty ewe to Shotts Slaughter House (condemned).

(g) Death Rate. Overall death rate this year was 7% in adult Greyfaces. Several ewes died when the weather turned cold just after clipping. Jaegsiekte remains a problem in the older Greyfaces although not as serious as last year. Death rate on the Systems and clean/dirty grazing flocks this year was 9%. Systems death rate was 8%. All the ewes lost during the cold spell at clipping time were from these flocks.

(h) Mating 1985

Ewe Breed	Sub Flock	No.	Ram	Mating	Synchronised
Greyface	Systems	240	Dorset	25/10/85	No
Greyface	Reprod.Performance	159	Suffolk	25/10/85	No
Greyface	Nutritional Study	216	Suffolk	1/11/85	Yes(108)
Greyface	Balance of Ewe Stock	248	Suff/Dor.	25/10/85	No
Blackface	Reprod. Potential	152	Blackface	20/11/85	No

3. CATTLE

(a) Winter and Supplementary Feeding. Autumn calving cows were housed for the winter on 22nd October 1984, followed by the spring calvers in two groups on 12th and 20th November 1984. The winter nutrition experiment ended when the last four cows left the Atcost shed on 21st July 1985. Turnout of the spring and autumn calving herds began at the start of May 1985 and the former group was completely at grass shortly after mid May.

Eighty spring calvers were fed 25 kg/hd/day silage from entry until calving and thereafter the ration was raised to 40 kg/hd/day. Another forty spring calvers used for systems studies were given an average of 20 kg/hd/day throughout the indoor period, before and after calving.

Fifty autumn calving cows took part in the winter nutrition trial. Varying levels of hay and concentrate were fed prepartum to manipulate body condition. After calving, all cows were fed an average of 7.4 kg hay to provide for maintenance plus concentrate at either 2 kg, 4.5 kg or 7 kg daily for milk production. An additional twenty six hay fed cows also kept in loose accommodation in the Atcost shed. This building also housed four Charolais bulls over the winter. They were joined by a further two bulls in late April, shortly before turnout. Six young stock unsold in autumn were also kept on (four weaned calves and two large store bullocks) and were given hay with barley and balancer.

As usual, mineral supplements were on offer to cattle at grass and added to the feedstuffs while inside. Magnesium rich cobs were given at the usual high risk periods while very considerable amounts were also fed to spring calvers during the main grazing season when the weather was most unusually wet.

For a few weeks before sale, weaned calves at grass were worked up to about 3 kg/hd/day bruised barley.

Sixty one autumn calvers were brought inside on 28th October 1985 while forty nine recently purchased cows with young calves at foot came in early in November.

Due to very poor ground conditions on the systems sites, the forty cows and their spring calves from these areas went into the Indescon shed in late September and early October, where they were fed 40 kg silage and 2 kg concentrate per head daily. The calves also consumed 1.5 kg creep feed each per day.

Over seventy head of spring calvers still remain outside and the forty cows to be sold in the later winter will remain so till they leave prior to calving. These cattle and the autumn calvers received round bales of hay, straw or silage in some measure depending on the availability of grass when large areas became poached in early autumn.

Details of rations for the winter 1984-85 and supplementary feeds to cattle outside are shown in Table 1 overleaf.

(b) Rebreeding. The procedure for the re-breeding of experimental autumn calving cattle still in individual stalls was similar to that described in the 1984 report. Those not on experiment were bulled as a group in a court in the Atcost shed. Bulling took place between 28th January and 4th April 1985. The latter group was turned out to Parkhead Wood and Milligans on 2nd May 1985 while the experimental animals were released over a period as they came to the end of the experiment. They went mainly to Pellwood, Springbank Roundel and to Springbank.

After turnout, starting on 7th May 1985, spring calvers were allocated to five different areas on the Strip and Pellwood for cattle grazing trials while the systems cattle went to their sites at Greengate and Springbank. With both these areas split into four separate paddocks, this meant that cattle had to be bulled on a total of thirteen separate plots necessitating the hire of three extra bulls in addition to our own augmented bull stocks. It was still necessary to move certain bulls from paddock to paddock each day to cover all cows. In total, one hundred and eighteen cows were run with the bull from 20th May till 25th July 1985.

(c) Calving. One hundred and eighty six calves were born live at Hartwood between 1st December 1984 and 1st December 1985. A total of 192 calves were at grass by late September, including a group of bought-in calves born in late summer. Four calves also joined the herd with their mothers on 10th May 1985.

Autumn/winter calving began on 14th November 1984 and continued till 13th January 1985. There was less than one month's gap before spring calving commenced on 2nd February 1985. Spring calving went on until 30th April 1985. These calves were all born indoors.

The number of calves born per hundred cows mated were 81 and 86 for the cows calving in the winter 1984-85 and spring 1985 respectively. The low winter calving figure possibly reflects the fact that the oestrus detection procedure had been in use for the first time at the previous bulling rather than natural service. Also, a quarter of the Pellwood systems cows, 6 out of 24, failed to become pregnant despite rotation of bulls during the summer of 1984. A satisfactory explanation for this has not been found.

TABLE 1. Winter and supplementary feed consumption

(a) Autumn calvers in Atcost shed (Nutrition Experiment)

Hay fed for maintenance at level of 5, 8 or 10 kg/head/day Prepartum
and 7.4 kg/head/day Post Partum

Concentrates fed at 3 kg/head/day Prepartum
and 2, 4.5 or 7 kg/head/day Post Partum

38 tonnes concentrate	@ £143/T	= £5434
79.5 tonnes hay	@ £ 82/T	= £6519
1.3 tonnes High Magnesium Cobs	@ £155/T	= £ 202
2 tonnes Minerals (High Phosphorus	@ £343/T	= £ 686
(High Magnesium		
(Trace Elements		
(Vitamins		

(b) Cows in Atcost shed Bulled to Calve in Autumn (Non Experimental)

35 tonnes hay	@ £ 82/T	= £2870
1 tonne minerals	@ £343/T	= £ 343
0.7 tonne High Magnesium Cobs	@ £155/T	= £ 109
Total feed cost		= £16163
Average number of cows in shed		= 70
Feed cost per cow		= £ 231

(c) Spring Calvers

Before turn in

149 bales silage	@ £ 15/bale	= £2235
6 bales straw	@ £ 7/bale	= £ 42

In shed

600 tonnes silage	@ £ 15/tonne	= £9000
16.5 High Magnesium Cobs (inc. those fed in summer)	@ £155/tonne	= £2557
4.5 tonnes minerals	@ £340/tonne	= £1530
Total feed cost		= £15364
Average number of cows		= 115
Feed cost per cow		= £ 134

(d) 6 Overwintered Store Heifers and Bullocks

4 tonnes hay	@ £ 82/tonne	= £ 328
1.8 tonnes (Barley Balancer)	@ £100/tonne	= £ 180
Total feed cost		= £ 508
Feed cost per stirk		= £ 127

(e) 4 Bulls Over Winter

7.2 tonnes hay	@ £ 82/tonne	= £ 590
1.4 tonnes barley	@ £100/tonne	= £ 140
Total feed cost		= £ 730
Feed cost per bull		= £ 182

(f) Barley Supplement to Weaned Calves at Grass

8.4 tonnes barley	@ £100/tonne	= £ 840

Mean birth weights are shown in Table 2.

Thirty-four calves have been born from 23rd October 1985 till the time of this report, 1st December 1985.

TABLE 2. Mean birth weights (kg) of Charolais cross calves

Winter born calves 1984-85		
Breed	Heifers	Bulls
Charolais x Hereford Friesian	39.0	41.9
Charolais x Blue-Grey	35.1	37.0
Spring born calves 1985		
Breed		
Charolais x Hereford Friesian	39.8	40.4
Charolais x Blue-Grey	34.6	35.9

(d) Cattle Disposals and Calf Weaning Weights to 1st December 1985. As in the previous nutrition experiment, a number of cows were slaughtered for analysis, and since 1st December 1984, 23 cows have gone to Biggar Abattoir. Consequently 12 young orphaned calves were available for purchase from December 1984 to February 1985. Calves from cows slaughtered after this were retained on the farm. Eight other calves and stirks left Hartwood as odd lots during the year.

In addition, 8 cows were sold to the Department of Grazing Ecology, one went to Shotts Abattoir as a casualty, and two others, of temperament unsuitable to research work, were sold as breeding cows, one with calf at foot.

On 31st October 1985, the Charolais bull, Newhouse Perfect, having recovered only partially from a rear leg injury sustained some months earlier, went to Biggar Slaughterhouse.

Twenty eight autumn and winter born calves and 32 spring calves were transferred to Glensaugh on 4th and 14th Otober 1985. On the following day, a further 48 were sold at Lanark Market and finally 41 went to Hamilton Market on 7th November 1985, leaving only two small stirks unsold.

Details of sales of suckled calves are shown in Table 3 while details of other disposals are given in Table 4. Table 5 shows the performance of Hartwood born Charolais cross calves. The poorer daily live weight gains, especially among spring calves, is probably associated with the extremely wet conditions over the summer.

TABLE 3. Sales of suckled calves

Sold to/at	Date	Breed	Sex	Number	Price/head
1984-85 autumn and winter calves					
Glensaugh	4/10/85	Ch x	M	14	£300
		Ch x	F	14	£290
Lanark Market	15/10/85	Ch x	F	5	£259
		H x	F	4	£226
		Fr	M	1	£231
1985 Spring calves					
Glensaugh	14/10/85	Ch x	M	16	£229
		Ch x	F	16	£210
Lanark Market	15/10/85	Ch x	M	23	£247
		Ch x	F	14	£213
		Fr	M	1	£231
Hamilton Market	7/11/85	Ch x	M	9	£239
		Ch x	F	28	£216
		AA x	M	1	£235
		AA x	F	2	£181
		H x	M	1	£235

(e) Replacements and Transfers from House o' Muir. As a result of proposals to change the structure of the herd to meet future experimental requirements, 40 Hereford-Friesian cows and heifers of the same type arrived at Hartwood from Perth in groups during the autumn. All had Charolais or Limousin calves at food except for 6 heifers which calved on the farm. The ten heifers and calves have since gone to House o' Muir to spend the winter along with ten in-calf Blue-Grey heifers bought at Haltwhistle in October. These heifers calved during November.

Two Charolais bulls were moved to Hartwood on 26th April 1985. One of these, eighteen months old, had been purchased only shortly before by research account. On 10th May 1985, 13 autumn calvers plus 4 spring calvers with calves arrived from House o' Muir.

Eight young calves have been purchased for fostering from 1st December 1984 to 1st December 1985.

TABLE 4. Cow, calf and bull disposals

Sold to/at	Date	Breed	Sex	Number	Price/head
Cows					
Biggar Abattoir	6/12/84	BG	F	3	£ 75
Biggar Abattoir	12/12/84	HF & BG	F	3	£220
Graz Ecol Dept	18/12/84	BG	F	3	£300
Biggar Abattoir	19/ 2/85	HF & BG	F	3	£154
Biggar Abattoir	26/ 2/85	HF & BG	F	3	£228
Biggar Abattoir	12/ 3/85	BG	F	2	£185
Storry, Badallan	1/ 4/85	BG*	F	1	£530
Graz Ecol Dept	2/ 4/85	BG & HF	F	5	£400
Shotts Abattoir	22/ 5/85	HF	F	1	Casualty
Biggar Abattoir	28/ 5/85	HF	F	3	£217
Biggar Abattoir	4/ 6/85	BG & HF	F	2	£134
Biggar Abattoir	18/ 6/85	BG & HF	F	2	£212
Biggar Abattoir	16/ 7/85	BG	F	2	£229
Storry, Badallan	22/ 7/85	BG	F	1	£460
Bulls					
Biggar Abattoir	31/10/85	Ch	M	1	£342 (part condemned)

(*Sold with calf at foot)

N.B. Prices for cattle slaughtered for experiment at Biggar Abattoir do not necessarily reflect those expected for commercial cast cows

Calves and Stirks					
Shanks,Greengairs	6/12/84) 12/12/84) 19/ 2/85) 26/ 2/85) 12/ 2/85)	Ch x, Fr	M & F	12	£118
Whiteford,Belstane	3/ 4/85	Ch x, H x (Stirks)	M	2	£485
Glasgow Univ. Vet School	15/ 4/85	Ch x	F	1	F.O.C.
Young, Redmyre	23/ 5/85) 10/ 6/85)	Ch x	M & F	3	£107
Young, Redmyre	23/10/85	Fr Stirk	M	1	£300

TABLE 5. Calf growth 1985

	Hereford Friesian Cow		Blue-Grey Cow	
Calves born in autumn/winter 1984-85	Male	Female	Male	Female
Average weaning weight (kg)	288	270	235	212
Average L.W.G. (kg)	0.93	0.84	0.77	0.73
Average age of all autumn calves at weaning : 260 days				
Calves born in spring 1985	Male	Female	Male	Female
Average weaning weight (kg)	224	201	186	177
Average L.W.G. (kg)	0.92	0.82	0.74	0.71
Average age of all spring calves at weaning : 200 days				

(f) Cattle Health. At both calving periods, scour, although present, did not cause a serious problem; most cases being brought quickly under control. There were a few cases of foot trouble among calves, both inside and outside. There was little incidence of pneumonia among young calves during the winter, although there was a build-up towards turn-out. One calf took New Forest disease in April.

At grass, a number of calves were chilled over the season and a few had to be brought inside for treatment. There was also a higher than normal occurrence of pneumonia at this period.

Among adult cattle, there were very few cases of mastitis, though one cow on the systems experiment was badly affected during the early summer. By far the most severe problem amongst cows was the prolonged incidence of hypomagnesaemia. This was first noticed when a cow died suddenly in late June. Shortly afterwards, the emergency treatment of cows for 'staggers' became almost a daily occurrence for some time. Despite extensive feeding of high magnesium cake four other cows died with similar symptoms on experimental sites. Over the year, two others have died suddenly of natural causes and one died of problems arising from a difficult calving.

Before calving, all cows were given E. Coli/Rotavirus anti-scour vaccine, and this autumn a preventive dose against fluke was also given.

Prior to turn-out, all autumn born calves were treated with Dictol as a preventative against lungworm.

During summer, calves were routinely dosed with Systemex and all young stock were given copper and selenium when blood levels were found to be low.

In addition to high magnesium cow cobs, magnesium mineral supplements were also on offer to all cattle throughout the grazing season.

4. LAND USE

Cropping Summary 1985

	ha	ac	Approx Amount Harvested (tonnes)
Barley	21.4	52.8	35
*Grass Silage	65.3	161.3	1550
Hay	4.0	14.8	15
Rape	24.0	59.3	-
Direct Reseed	25.9	63.9	-

*Includes approximately 400 big bales silage

The barley crop was sown during a dry spell in mid March but incessant rain rotted out about 20% of the crop. Spraying for weeds was carried out during dry periods and the crop looked reasonably good, continuous wet weather altered the picture completely with crops laid and despite a relatively dry October when combining at last got a start barley yields were down to approximately 15 cwt/ac. All straw was 'big baled' and used an an early winter roughage feed for cows.

More grass silage than normal was made but of a considerably lower quality than in previous years. Some fields were badly tracked and will have to be ploughed out of rotation. About 4 ha (10 ac) of aftermath were cut, baled and carted to outside stock in October thus saving some silage.

Hay was virtually non existent this year - about 80 big bales being made and this has already been fed as roughage to outside cows.

Getting the rape crop in the ground was almost impossible and even after a reasonable germination, 75% of the crop rotted out during the next 8 weeks. Only the harder and drier parts of fields produced a worthwhile crop.

A field of 3 ha rape has been taken from a neighbour to help finish the remaining lambs.

Direct reseeding was also difficult but 80% of this work was carried out, the remaining 20% postponed until 1986.

Spraying for weeds in the reseeds was impossible but in most cases weeds were cut by silage harvester and in the worst cases carted off.

5. BUILDINGS

(a) Building Maintenance. As usual roof repairs, rhone repairs, painting etc have been carried out under the building maintenance programme. Redecoration was carried out in the student flat and the board room.

(b) Drainage. Ditch cleaning, tile drain bursts, outlet maintenance etc have been carried out by the farm staff. The piped water supply was extended to cover the Moor, Carrot Patch, Murdostoun and Sanatorium by contract labour and mole draining plough.

(c) New Office and Other Building Works. This building has now been completed (April 1985) and is very satisfactory. Heating is by electric night storage heaters on white meter tariff. Because of the proximity of toilets and wash up facilities no piped water has had to be laid in the new office which means frost damage is eliminated and heating can be cut off at weekends and holidays.

A new automatic slurry handling system has been installed in the Indescon shed and a 210,000 gallon slurry store with bubbler unit erected. A start has been made to the conversion of the old byre/implement shed to a cattle metabolism unit.

A shower unit was provided in the old chemical store.

(d) Fencing. Approximately 4000 yards of fencing have been renewed or overhauled by contract or farm staff. Twenty new metal gates have been hung to replace broken or old wooden gates.

(e) Phosphate Levels at Hartwood. Almost every soil analysis carried out on the station show low or very low phosphate levels. 126 tonnes of Scotphos (2-30-0) was purchased and 104 tonnes applied at rates of 3½ cwt to 5 cwt/ac. Wet ground conditions prevented the last 22 tonnes being applied but this will be done in the spring of 1986. It has been decided to have soil analyses taken on every field on the station (starting December 1985) in order to establish a base line for further phosphatic treatment.

(f) Liming. 258 tonnes of ground magnesium limestone were applied during the year.

6. EQUIPMENT

A second hand tractor and a new small steel bogey were purchased mainly for use in the cattle sheds. Other small items of workshop equipment were purchased. The farm van, which was in poor condition, was replaced by a Ford Escort van recommended by the Scottish Office transport section.

7. OTHER ITEMS

(a) Vermin Control. 59 adult foxes were killed during the 1984-85 year. Some mole poisoning was carried out and a second round is proposed.

(b) Conservation of Woodlands. Following on last year's programme a further 1000 mixed hard wood trees have been under planted in the cleared areas. Again the Central Scotland Woodlands Project provided five hundred trees free of charge.

Some clearing of debris left by contractors in the previous year was carried out.

RED DEER FARM

1. WEATHER

After the wettest November on record, the winter continued mild with considerable hill mists to the end of December. Snow fell on the 2nd January and covered the higher ground and a further 4-5 inches fell on the 17th and persisted until mid-February. Thereafter the weather was mild with sunny spells through to April which was wet and windy but mild. May was cool and wet and June was extremely wet. The rest of the summer months were cold and wet right through to October. October was good with almost three weeks of dry mild sunny weather. November was showery with some severe frosts and 2 inches of snow fell on the 10th with drifting and extreme cold. Most of the high ground had cleared by the 18th and the weather became mild and mostly dry with occasional showers. Snow fell again in the last week of the month with drifting up to two feet on the roads. Temperatures of -19^{o} were recorded in the region. This was followed by heavy rain and temperatures of $+13^{o}$. This sudden change caused severe flooding with considerable damage to access roads and fences.

2. RED DEER

(a) The 1984 rut. The weather was generally good for most of October and stags rutted well. The melatonin treated stags were in full rut on the 1st September and the Wapiti bull rutted earlier than last year and was actively interested in hinds from the middle of September. Hinds in all locations increased liveweights over this period.

(b) Winter feeding. All stocks were fed from the 5th December through to the 18th April - a much extended period compared with last year and due to the shortage of vegetation on the hill wintering areas following the third year of summer drought. The deerstocks wintered well and the supplement fed was mostly in the form of hay. The costs are up by £3.55 per head on last year. The details are shown in Table 1.

(c) Calving. The first calf was born on 21st May on the low ground at Loch-hills and 57 calves, 21%, were born before the 1st June - a reflection of the early rut in October 1984. The location of the hinds during the rut had no effect on the earliness of calving. The number of calves born in May was in direct proportion to the number of hinds to the stag in each of the three locations, the Loch-hills upland pastures, the hill reseeds and the heather hill - a reflection of the body condition of the hinds and the weather during the 84 rut. However, the weather in late May and for the most of June, the peak of the hind calving, was cold and very wet. On the exposed pastures at the Loch-hills area the weather conditions triggered off an outbreak of Cryptosporidiosis in the newly born calves. Of the 271 calves born, 3 were still-born and 45 died before weaning.

The high number of yeld hinds was again due in part to the failure of the Wapiti bull to serve 13 of his group of hinds at the 84 rut and also to the high percentage of the yearlings which failed to breed. The old hinds continue to breed successfully. The reproductive performance of the stocks is shown in Table 2.

TABLE 1. Winter feeding levels and costs for all adult stock

Group	Period fed	Hay kg/hd	Hay cost	Concentrates kg/hd	Concentrates cost	Total cost of feed per head
Hill hinds(96)	5 Dec-18 Apr	117	£ 8.78	2.34+	£0.56	£ 9.34
Upper Farm hinds (124)	5 Dec-18 Apr	148	£11.10	3.26+	£0.78	£11.88
Loch Hills hinds (71)	5 Dec-18 Apr	145	£10.88	8.50	£1.15	£12.03
Yearling hinds (27)	21 Dec-18 Apr	112	£ 8.40	45.00	£6.08	£14.48
Stags (24)	9 Dec-18 Apr	218	£16.35	32.00	£4.32	£20.67

N.B. Hay costed at £75.00 per tonne
Concentrates costed at £135.00 per tonne

+Urea blocks costed at £5.43 per 22.5 kg

TABLE 2. Reproductive performance of Cohorts

Cohort	Hinds to stag	Hinds died	Hinds yeld	Calves born	Calves born dead	Died birth to wean	No Wean.	Weaning %
A	2	-	-	2	-	-	2	100
B	39	1	5	34+	1	8	25	64
C	20	-	3	17	1	2	15	75
H	44	-	3	41	-	7	34	77
J	28	1	4	23	-	3	20	71
K	14	-	3	11	1	1	9	64
P	25	1	2	22	-	2	20	80
R	69	-	13	56	-	9	47	68
T	49	-	3	46	-	8	38	78
V	31	-	12	19	1	5	13	42
Totals	321	3	48	271	3	45	223	72

+ 1 twins

(d) Weaning. Those red deer calves which survived on the upland pastures were much lighter in body weight than in the previous year, particularly the Wapiti x red calves which did not do well. The hill calves were excellent and helped greatly to keep the overall weaning weights of the red deer calves similar to last year. 223 calves were weaned. The weights are shown in Table 3.

TABLE 3. Weaning weights of calves (nos. in brackets)

Breed	Sex	Liveweight (kg) September 84	Liveweight (kg) September 85
Red deer	Stag hinds	41 (116)	40 (91)
Red deer	Hind calves	38 (92)	38 (86)
Wapiti x red	Stag hinds	50 (6)	39 (4)
Wapiti x red	Hind calves	50 (6)	41.3(7)

(e) Disposal of the calf crop. The demand from the industry for store red deer calves of both sexes early in the season persuaded us to organise a sale of calves at a central location in early October so that we could offer the surplus calves from Glensaugh and the calf crop from Rahoy. A total of 61 calves were sold from the Glensaugh herd and 140 weaned calves have been retained. A number of calves died post weaning from mycotic pneumonia and accounted for the remainder. The figures are shown in Table 4.

TABLE 4. Disposal of weaned calves

Nos.	Disposition
61	Sold at Perth Auction
22	Died post weaning from mycotic pneumonia
140	Retained for research purposes
223	(Includes 11 Wapiti x red calves)

(f) Calf sale prices. The Perth Auction held at our request by Macdonald Fraser & Co at the Caledonian Road market was a great success. This was the first time red deer had been sold in commercial premises adapted to accommodate deer. The demand was good for both sexes of calves, buyers of stag calves were paying prices which would make the finishing of the calves an economic possibility. The buyers of hind calves had to pay a price which reflected the scarcity of calves rather than economic viability - it will be two years from the date of purchase before there is any return on the stock. The price realised for hind calves are up on last year by £55 per head. The details of the sale are shown in Table 5.

(g) Sales to farmed venison market. The arrangement with the Waitrose Supermarket stores and Buchan Meat Producers at Turriff continued this year with the sale of 72 16 month old stags which had been on experiment at the Loch-hills grassland during the summer. The price per kilo dead carcass weight negotiated was up by 27.7 pence per kilo. The details are shown in Table 5(a).

TABLE 5. Store calf sales and prices - Perth Auction

Date	No.	Stock	Average liveweight (kg)	Price/p kg lw	Price per head £
10.10.85	10	Stag calves	36	194.4	70.00
10.10.85	5	Hind calves	29	551.7	160.00
10.10.85	6	Hind calves	32	531.3	170.00
10.10.85	10	Hind calves	34	529.4	180.00
10.10.85	10	Hind calves	36	527.8	190.00
10.10.85	10	Hind calves	38	526.3	200.00
10.10.85	10	Hind calves	42	488.1	205.00
Totals	61		36	467.7	£168.36

TABLE 5(a). Deer sold for farmed venison market

Prime 16 month old stags killed in abattoir at Buchan Meat Producers, Turriff

Date	No.	Stock	Average carcass wt (kg)	Price/p dcw kg	Price per head £
7.10.85	16	Stags	44.0	319.7	140.69
14.10.85	16	Stags	43.3	319.7	138.46
22.10.85	25	Stags	39.3	319.7	125.89
28.10.85	15	Stags	35.8	319.7	114.45
Totals	72		40.5	319.7	£129.58

(h) Venison sales to the game market. Deer which have to be culled from the stocks for various reasons and wild deer which have to be shot for management purposes are sold to Mitchell Game Ltd, Letham, Angus. The price is up this year at 90 pence per pound in skin carcass, (198 pence per kilo). The numbers sold and the prices realised are shown in Table 5(b).

(i) Breeding replacements. Ten red deer hind calves have been artificially reared to provide tame animals for research work, and a further 21 hind calves have been retained because they have been exposed to pastures contaminated with the faeces of hinds suffering from mycobacterial infection. These calves will be retained until such time as they can be deemed to be free of infection.

TABLE 5(b). Culled deer sold to game market

Date	No.	Stock	Age	Average carcass wt (kg)	Price/p dcw kg	Price per head £
29. 7.85	1	Stag	16mo	50.00	198.0	99.00
7. 8.85	1	Hind	16mo	23.18	198.0	45.90
	2	Stag	16mo	34.55	198.0	68.40
9. 9.85	1	Stag	Wild	58.18	198.0	115.20
23. 9.85	2	Stag	Aged	87.27	198.0	172.80
9.11.85	1	Hind	Aged	32.30	198.0	63.90
14.11.85	1	Hind	16mo	38.20	198.0	75.60
22.11.85	2	Stag	Wild	48.40	198.0	95.85
29.11.85	1	Stag	Aged	60.00	198.0	118.80
Totals	12			50.19	198.0	£99.38

(j) Hind deaths. One hind (H39) was found dead with cracked ribs and a punctured lung - probably caused by a rutting stag. Another (H43) was also found to be badly injured during the rut and was put down. Hind (P10) was found dead after the rut and was partially eaten by foxes and so the cause of death is unknown. Hind C6 was found dead in the burn, buried with gravel after the floods of 30th November/1st December. A young hind and a yearling were put down after being found to be infected with a mycobacterial infection.

(k) Calf deaths. An outbreak of Cryposporidiosis in the newly born calves accounted for 39 calves. The initial infection was in many cases followed by secondary infection with pathogenic strains of E. Coli and clostridial bacteria. The average age of the calves at death was 11 days. The outbreak was largely confined to the exposed pastures at Loch-hills.

A post weaning outbreak of mycotic fungal pneumonia in housed calves fed on bought-in Stirlingshire hay accounted for a further loss of 22 calves. Red deer calves appear to be very sensitive to lung damage by the fungal spores of Aspergillus fumigatus.

(l) Mycobacterial infection in the red deer. Several of the yearling aged deer became infected with acid fast bacilli which are thought to be Johnes disease organisms or Avian tuberculosis bacteria. Those animals found to be passing the bacilli in their faeces have been put down. Cultures of the organisms are being held at Lasswade in an effort to established a clear identification of the bacillus. In the meantime all the deerstocks are being monitored for the presence of acid fast bacilli in their faeces and their blood is being subjected to the Compliment Fixation Test (C.F.T.). Animals which show a positive score will be removed from the herd.

(m) The 1985 rut. The Wapiti bull rutted early again this year and was interested in the hinds by early September. Two recently purchased Wapiti bulls rutted later, the two year old did not become very active and spent most of the rut jumping fences and being a

nuisance. The new three year old bull was active in the early part of the rut and then lost interest. The five year old Wapiti rutted much longer this year.

Pere David bulls were active with ten cows in the steading paddock immediately they were introduced in July.

The four Wapiti x red yearling stags appeared to rut well and the red deer stags all appeared to be in full rut during October.

The dates when the stags and the bulls were placed with the females are shown in Table 6.

TABLE 6. Stag release 1985

1.	Pere David bulls	-	19th & 26th July
2.	Wapiti bulls	-	24th and 25th September
3.	Wapiti x red stags	-	23rd September
4.	Hill hinds	-	26th September - 4th October
5.	Upper Farm Reseeds	-	29th September - 2nd October
6.	Loch Hills area	-	29th September

3. FENCING

The hill areas of the main farm were divided into two main blocks with the erection of a short new fence in the Goyle. The old dividing fence will be removed gradually as time permits. The Upper Farm hill has now been reduced to two main blocks of land by the removal of internal fencing. This will reduce the cost of maintenance and will facilitate winter management.

The Pere David paddock was divided into two with a cross fence in order to capture the escaped hind and calf - this was successful. The grassland areas at the Loch Hills was protected from rabbits with the erection of rabbit netting on the existing deer fences.

The fence dividing Hogg field 1 and 2 was altered so that Hogg 2 is now one hectare in extent.

The area between the Hogg Park and Hard Park was fenced off for the deer herd.

4. BUILDINGS

The lean-to Met House was divided with partitions to form three pens to hold ten hinds each, with a handling pen and weighing facility.

5. HANDLING EQUIPMENT

A portable handling system was designed for the Pere David deer and manufactured by Ritchie of Forfar - an identical system was supplied for use at Whipsnade Zoo and the design is now being used in China to handle the Pere David deer they have there.

6. STAFF

Mr Callum Thomson, deer stockman at Glensaugh since 1977 was transferred to the Rahoy Deer Farm in April, for a period of three years.

Mr Allan Sneddon joined the Organisation as deer stockman at Glensaugh on a temporary three year appointment from April 1985.

Mr Steven Busby joined the Red Deer Project as an A.S.O. in April on a temporary three year contract.

II SUMMARY OF FLOCK RECORDS 1984-85

GLENSAUGH

TABLE 1. Reconciliation of ewe numbers 1984-85

Flock	Breed	Ewes and Gimmers November 1984	Cast and Cull	Deaths		Gimmers brought in		Ewes and Gimmers November 1985	Hoggs kept Nov. 1985
				No.	%	Home bred	Others		
Cairn	BF	253	66	16	6.3	60+2G+21E	-	254	72
Birnie	BF	205	63	17	8.3	50+12G+13E	-	200	68
Finella	BF	212	83	14	6.6	54-14G-34E	-	118	51
	EFBF	45	5	0	0	10	-	50	35
	GF	84	19	5	6.0	4	30	94	-
	NCC	163	73	9	6.0	35	-	116-30*	33
	EF NCC	60	20	4	6.7	15	-	51	19
	NCC Shet.	97	34	2	2.1	-	42+1E	104	-
	HB	0	-	-	-	-	48+37E	85	-
Totals		1119	363	67	6.0	225	158	1072	278
For Sale								23	14
For HQ								29	

* Loaned to HQ

GLENSAUGH

TABLE 2. Pre tupping weights - Liveweight of sheep : November 1984 to November 1985

Flock	Breed	Ewes		Gimmers		Hoggs	
		1984	1985	1984	1985	1984	1985
Cairn	BF	55.8	57.2	42.0	49.7	31.7	34.5
Birnie	BF	58.5	57.8	44.3	44.0	30.7	36.8
Finella	BF	50.3	53.1	45.0	46.4	30.8	34.5
	EF x BF	55.9	60.1	-	45.6	36.0	35.1
	GF	61.4	60.6	53.3	66.1	40.8	-
	NCC	62.5	64.2	57.1	52.8	38.2	37.4
	EF x NCC	61.1	60.0	48.1	49.4	37.8	34.7
	NCC x Shet	50.8	50.5	40.6	45.2	-	-
	HB	-	73.0	-	70.6	-	-

TABLE 3. Reconciliation of cattle stocks

	No.at 1.12.84	Births	Age Transfers	Purchases	Deaths	Sales	Age Transfers	No.at 1.12.85
Breeding Cows	51	-	-	8	2	12	5	50
Breeding Heifers	0	-	-	5	-	-	1	1
Bulls	1	-	-	1	-	-	-	2
Store Cattle	124	-	1	60	1	122	-	108
Calves	0	56	-	2	2	-	48	8
Totals	176	56	1	76	5	134	54	169

SOURHOPE

TABLE 1. Reconciliation of ewe numbers 1984/85

Flock	Ewes & Gimmers Nov.1984	Draft + culled Ewes	Ewe Deaths	Gimmers brought in	Ewes & Gimmers Nov.1985	Hoggs Nov.1985
SCC Fasset	202	40	8	48	202	50
NCC x SCC NEHL/Auchope	667	146	14	164	671	160
NCC Park Law	149	29	4	39	155	45
BF Rigg	269	54	6	66	275	75
BF Gairs	300	62	5	75	308	80
BF Alderhope	293	63	1	68	297	73
BF Banks	341	68	15	80	338	89
Total Blackface	1203	247	27	289	1218	317
Station Total	2221	462	53	540	2246	572

SOURHOPE

TABLE 2. Pretupping weights of ewes, gimmers and hoggs, November 1984 + November 1985

Flock	Ewes		Gimmers		Hoggs	
	1984	1985	1984	1985	1984	1985
BF Rigg	54.5	56.7	49.0	54.0	33.9	36.0
BF Gairs	56.8	59.6	52.3	50.9	34.6	35.3
BF Alderhope	59.4	60.0	52.8	54.1	35.5	35.4
NCC x SCC NEHL/Auchope	60.5	62.6	51.8	52.4	36.8	39.2
NCC Park Law	61.5	65.3	49.4	56.2	35.7	36.1

TABLE 3. Wether stock, November 1985

Year of birth	1980	1981	1982
SCC	27	31	26

HOUSE O' MUIR

TABLE 1. Reconciliation of ewe numbers

Ewes & Gimmers Nov.1984	Cast	Sold to Research	Deaths	Gimmers	Ewes & Gimmers Nov.1985
488	40	25	12	107	518

TABLE 2. Reconciliation of cattle numbers

Autumn Calvers November 1984		Transfers in		Transfers out			November 1985
		From Hartwood	Purchased	Sold	To Hartwood	To Spring herd	
H/Friesian	21	10	-	2	5	12	12
B/Grey	24		10	1	9	14	10
Total	45	10	10	3	14	26	22

Spring Calvers November 1984		Transfers in	Transfers out			November 1985
		From Autumn Herd	To Hartwood	To B.Mawr	Sold	
H/Friesian	1	12	1	-	-	12
B/Grey	2	14	2	-	-	14
AA/Friesian	10	-	-	9	1	-
Total	13	26	3	9	1	26

HARTWOOD

TABLE 1. Reconciliation of ewe numbers, December 1984 - December 1985

Breed	Ewes & Gimmers Dec.1984	Purchases and Transfers	Deaths	Sales and Transfers to Research A/c	Ewes & Gimmers Dec.1985
Blackface	76	80	4	-	152
Greyface	857	246	60	180	863
Total	933	326	64	180	1015

TABLE 2. Wethers

Breed	Adult Wethers Dec.1984	Purchases and Transfers	Deaths	Sales and Transfers	Adult Wethers Dec.1985
Blackface	70	3	-	13	60

TABLE 3. Pre-mating weights of Greyface ewes and gimmers (kg)

	October 1984		October 1985	
	Ewes	Gimmers	Ewes	Gimmers
Systems	72.7	65.4	67.9	56.9
Reproductive Performance	69.6[o]	-	67.6	-
Nutrient Supply (Autumn)	76.1	-	65.4	60.9
Balance of Ewes and Gimmers	75.1[x]	64.0[x]	-	-

[o] High condition ewes excluded

[x] Early October weights

HARTWOOD

TABLE 4. Reconciliation of cattle numbers 1 December 1984 to 1 December 1985

	At 1st Dec.	Births	Purchases	From HOM	To HOM	To Glensaugh	Deaths	Sales	At 1st Dec.
Adult Cattle	201	-	50	17	10	-	9	34	215
Bulls	4	-	-	2	-	-	-	1	5
Calves Stirks	27	186	52	4	10	60	15	109	75
Total	232	186	102	23	20	60	24	144	295

RED DEER

TABLE 1. Reconciliation of stock numbers 1984-85

STOCK	NOS AT 1.12.84	AGE TRANSFER	CALVES BORN	PURCHASES	DEATHS	SALES	AGE TRANSFER	NOS AT 1.12.85
AGED STAGS	23	—	—	2	2	2	—	21
PRICKETS	0	1	—	—	—	—	—	1
YOUNG STAGS	1	9+	—	—	—	—	1	9+
STAG CALVES	100	0	134	—	50	89	9+	86++
MATURE HINDS	237	49	—	—	4	—	—	282
JINNOCKS	50	30	—	—	1	—	49	30
YOUNG HINDS	36	35	—	—	1	5	30	35+
HIND CALVES	49	—	137	—	39	57	35+	55+
TOTALS	496	124	271	2	97	153	124	519

\+ Includes 4 Wapiti crosses

++ Includes 7 Wapiti crosses

RED DEER

TABLE 2. Liveweights of breeding hinds (nos. in brackets)

HINDS	BORN	LIVEWEIGHT (KG) SEPTEMBER 1984	LIVEWEIGHT (KG) MARCH 1985	LIVEWEIGHT (KG) SEPTEMBER 1985
A	1970	87.0 (2)	87.0 (2)	95.5 (2)
B	1971	89.7 (31)	82.8 (38)	88.1 (38)
C	1972	86.1 (18)	83.8 (20)	87.8 (20)
H	1974	87.8 (41)	80.4 (44)	83.4 (44)
J	1975	88.9 (27)	81.5 (28)	85.7 (27)
K	1978	82.9 (14)	80.1 (14)	82.6 (14)
P	1980	80.9 (21)	81.0 (24)	87.2 (24)
R	1981	80.2 (51)	77.8 (69)	84.8 (69)
T	1982	77.0 (40)	77.7 (50)	86.6 (48)
V	1983	70.8 (30)	73.5 (31)	80.9 (31)
X	1984		48.2 (35)	65.2 (34)