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Research and Farms Report for Year November 1960 - October 1961

	<u>Page</u>
A. <u>ANIMAL STUDIES</u>	
I Review of Experiments in Progress	1
II Summary of Flock Records for 1960-61	7
B. <u>BOTANICAL STUDIES</u>	16
C. <u>FARMS REPORT</u>	
I Glensaugh	20
II Lepinmore	26
III Sourhope	32

A. ANIMAL STUDIES

PART I EXPERIMENTS IN PROGRESS

BREEDING AND GENETICS

North and South Country Cheviots (Sourhope) (J. F. Robinson, J. N. Peart).

This comparison, started in 1952, has now ceased. Despite their introduction to harder ground than that on which the breed is normally grazed in the South of Scotland, the North Country Cheviots out-produced the South Country in lamb production (slightly higher prolificacy and heavier weaning weights) by about 30%. They grazed the same hill to which both stocks were introduced at the same time, but they have never grazed as a mixed flock, and partly as a result of the timidity of the South Country Cheviots, the North Country flock claimed more than its fair share of ground, thus having a grazing advantage which tends to cancel some of their apparently better production under mixed grazing. A comparison of two breeds under these conditions is unsatisfactory.

The two breeds have now each been allocated to their own area, on each side of the dividing fence, and have benefited from the separation. The majority of ewes in both sub-flocks form part of long-term "plane of nutrition" hogg wintering studies by Mr. Gunn and continue to be recorded for this purpose.

A/Br/1. Lanark, Newton Stewart and Lewis type Blackface - Glensaugh (J. F. Robinson, R. R. Shepherd).

This trial started in 1950 when 30 ewes of each type were introduced to Glensaugh for comparison with the farm stock which resembles the Perthshire type of Blackface, and for a study of these strains under a common environment. A comparison of the younger generations, bred on the farm, is now being written up. Contrary to expectations there are no marked differences in performance, yet the superiority of the smaller framed types is shown when lamb production is assessed by weight of ewe. Thus, the total weight of lamb weaned per 100 lb. of ewe mated was 58 lb., 64 lb., 67 lb. and 62 lb. for the Lanark, Newton Stewart, Lewis and Home-bred types respectively. In a harsh environment like Glensaugh, there can be little doubt that the Lanarks were penalised by their larger skeletal size. The smaller Newton Stewarts were impressive for their better sustained condition in winter.

Following this initial comparison of general performance, these "strain" ewes have been used for a number of closer investigations, including milk-recording and grazing behaviour observations by Joan Munro, and currently into certain fleece characteristics, also comparative growth studies of single, twins reared as singles, and twin lambs, by Dr. Doney. Some of the younger ages, starting February 1962, will be injected with selenium in a collaborative experiment with the Rowett Institute in connection with "broken-mouths".

Blackface strain trials (Top-crossing experiments)

(Lephinmore - Mid-hill)
(Sourhope - Schil) (J. F. Robinson, D. C. Currie, J. N. Peart).

The use of rams of the "introduced" breed types, namely Newton Stewart, Lewis and Swaledale at Lephinmore and Newton Stewart at Sourhope, ceased in 1961. At mating, November 1961, and henceforth, only Lanark type rams, conforming to the respective home-bred stocks, will be used. The management and recording will continue as hitherto in order to assess the effects of top-crossing (1955 to 1960) on the ewes' performance when mated to rams of a common Lanark Blackface type. The average carcass weights of wether lambs, fed on rape, were 30.3 lb. (12), 29.5 lb. (11), 29.5 lb. (10) and 29.2 lb. (12) for the pure-bred Lanark and the Newton Stewart, Lewis and Swaledale crosses respectively. The numbers slaughtered are noted in brackets.

A/Br/2. Inbreeding of Blackface sheep - Glensaugh (J. M. Doney).

Matings of four rams to daughters and unrelated ewes were carried out for the third year. One of the original rams was replaced on death by an inbred son but all matings were otherwise as before. The results in 1961 were similar to those in the previous year with inbreeding reducing the number of lambs born, increasing the neo-natal mortality and reducing birth and succeeding weights. Preliminary results/

results are to be presented at the 1962 meeting of the British Society of Animal Production.

A/Br/3. Selection of milk yield in Cheviot ewes - Sourhope (J. N. Peart)

This selection experiment, in collaboration with A.B.R.O., is continuing. Although results for 1961 are not yet fully analysed, there was a slight difference in weaning weights of lambs in favour of the "selected" flock.

A/Br/4. Recording of difficult births (Dystocia) (R. G. Gunn)

Detailed observations on difficult births continue to be made on all three farms. After a further year's observations the records will be examined in order to assess the various factors predisposing to loss from these causes.

Susceptibility to difficult births naturally varies between male and female lambs, also between singles and twins. In addition, genetic differences between breeds (e.g. Blackface and Cheviot) or between individuals within a breed are implicated.

The sheep of St. Kilda (J. M. Doney, R. G. Gunn)

Co-operation in this project with the Nature Conservancy is continuing. Three observational visits were made in May, June and October. Further animals were trapped and much skeletal material was collected for analysis. A preliminary report on this work is now being compiled for publication.

WOOL INVESTIGATIONS

A/Fl/1. Factors affecting fleece growth - Lephinmore (J. M. Doney)

This work, described previously, has been continued. The effect on rate of wool production of pregnancy and lactation as well as nutrition in these conditions are the factors presently being investigated.

A/Fl/3. The adaptive value of the fleece - Glensaugh (J. M. Doney)

This investigation is being carried out to determine whether differences in fleece characteristics have any functional value to the animal. The first phase of the experiment involved the study of sheep on a maintenance diet exposed to hard conditions. There being no effective winter in 1960-61, the same phase is being repeated. Attempts were made during the year to find alternative measures of adaptation. Currently a method for determining the actual insulation in terms of $^{\circ}\text{C}/\text{Cal}/\text{M}^2/\text{hr}$ has been developed. It will allow a study of the effects of wind etc. on the insulation of the fleece.

Efficiency of wool production - Sourhope (J. M. Doney)

Monthly wool samples are being taken from 9 wethers involved in the intake studies of Mr. Eadie. This will allow investigation of the efficiency of wool production in relation to the level of feed intake and climate and will therefore be complimentary to the studies at Lephinmore.

Effect of pre- and post-natal nutrition on fleece development - Glensaugh (J. M. Doney)

The lambs, from a previous experiment were kept to provide material for this study. Twin lambs removed from their dams either at birth or at 8 days of age were reared on an artificial milk diet in a battery system. Their early rate of gain while on milk was kept very low, after which at 4 weeks of age they were weaned to young grass and treated as well as possible. We have therefore provided a variety of pre- and post-natal treatments to study differences in fleece pattern of the growing sheep.

A/Fl/4. Effect of post-clipping experience on ewe performance (J. M. Doney, J. N. Peart)

Following the different shearing treatments applied in 1961, no significant differences have been found either in weaning weights of lambs or the rate of wool regrowth. This result was not unexpected as weather conditions immediately after/

after shearing were sunny and mild and in no way imposed any stress on the newly shorn sheep.

NUTRITION

Sourhope (J. F. Robinson, J. N. Peart)

Pre-lambing feeding trials on the Schil (Blackface) have now ceased at Sourhope, having completed a six year programme.

The results indicate merely a saving of 3% of lambs by "feeding", insufficient to repay the cost. Following moderately hard winters, however, like 1956 and 1958, the combined responses from saving lambs increased weaning weights (3 lb. in singles), increased fleece weight ($\frac{1}{2}$ lb. in 1956) and a slight saving in loss of ewes made feeding almost worthwhile. In harder winters, therefore, "feeding" is recommended as an alternative or extra supplement to hay which is the customary "storm feed" in the Borders. In 1956 the improved fleece weights appear to be related to the inclusion of protein of animal origin (12% herring meal) in the rations. Poor weaning weights of lambs and a much retarded recuperation in ewes in 1958 seem to illustrate a need for post-lambing supplementation (say 2 or 3 weeks) when spring growth is abnormally delayed.

Lephinmore (J. F. Robinson, D. C. Currie)

Pre-lambing feeding trials continue on the Low- and Mid-hill hills on the basis of twice weekly offerings for about six weeks before lambing. In a succession of better than average winters, the saving of lambs covered the cost of the feed, but this advantage was much improved upon by feeding followed by lambing within an enclosure on the lower slopes of the hill, as on the Mid-hill. This lambing on "safer" ground reduces loss of young lambs from drowning and other causes in the customary open-hill lambing. No apparent responses were obtained by way of improvement in lamb growth or in fleece weights.

On both Lephinmore and Sourhope, it would seem that single-bearing ewes are capable of considerable tolerance to over-weight loss post-parturition of up to 20% of the weight pre-mating in November (equivalent to about 10 lb. loss, reckoning on the pre-lambing weight).

Analyses of lamb records over the past six years denotes greater disparity in birth weights between male and female single lambs at the two extremes of foetal nutrition. Thus, at Sourhope, in the unfed sub-flocks following a moderately hard winter, there is greater sex disparity than following mild winters. In harder winters therefore, female lambs prove the more susceptible to loss and at the same time the more responsive to improvement in birth weight and survival by pre-lambing feeding. On the other hand, in good years, when there is no greater restriction in foetal nutrition (notably as a result of pre-lambing feeding or in a good "mossing season" at Lephinmore) male lambs develop to their greater genetic capacity which again makes for increased disparity in birth weight by sex. At Lephinmore, this situation is thought to predispose to the abnormally high incidence of loss from delayed or difficult births (hanging) in male lambs. While feeding might be expected to accentuate such trouble, this risk appears to have been offset by improvement in the muscular condition of the ewes.

A/Nut/1. Glensaugh (J. F. Robinson, R. R. Shepherd)

The investigation of three levels of protein - 16%, 7% and 3% in pre-lambing supplements - was carried out, but abnormally high ambient temperatures prevailed almost throughout the six week period of feeding, and there was an unusually early growth of grass on the hill.

There were no differences between the supplements containing 7% and 3% of protein, but the 16% protein ration gave improved birth weights in 2-year-old/

old ewes and improved fleece weight in 3-year-old ewes. Such responses may be aberrant.

An abnormally high rise in the level of blood urea between mid-February and the end of March 1961 is thought to reflect a surfeit of protein, or of non-protein nitrogen, from an exceptionally early growth of hill pasture. Urea determinations will be repeated in the 1962 experiment in which groups on supplements containing 16% and 7% digestive crude protein are compared with an unfed control.

Sourhope (sheep house experiments) (J. N. Peart)

Sixty-four ewes in four groups of 16 were housed and fed individually. The following pre-lambing feeding treatments were imposed on a basal diet of hay.

- Treatment 1 - No concentrate supplement.
 " 2 - 6 ounces of concentrate supplement for 3 weeks.
 " 3 - 6 " " " " " 6 "
 " 4 - 6 " " " " " containing 10%
 of added oil in the form of animal tallow.

All ewes received a mineral and vitamin supplement in the last six weeks of pregnancy.

Three weeks of supplementation was nearly as successful as six weeks.

Ewes and lambs were very weak in the unfed group, yet survival of single lambs was remarkably good but there was some loss of twins.

Performance on the supplement containing 10% oil was not significantly different from that in the other two supplemented groups. Faecal analyses showed there was slightly greater excretion of calcium in this group than in Treatment 3.

On inbye pasture, all lambs made similar growth to weaning.

A/Nut/2. Dentition investigations - Glensaugh (J. F. Robinson)

In collaboration with the Morodun Institute these investigations now centre on the Cairn sub-flock (about 90 ewes). Blood mineral determinations 1960 and 1961 have shown a marked depression of phosphorus (also magnesium in 1960) when the ewes are brought inbye for lambing. Phosphorus supplementation on the lambing pastures in 1961 and in lactation after transfer to the hill (twice weekly feeding) in 1960 helped to maintain or improve blood phosphorus. Withdrawal of the supplement in 1961 was followed by a fall in blood phosphorus. This depression occurred in two groups of ewes, one of which was transferred to the hill and the other retained inbye for two to three weeks after the supplement ceased. From this information, it would seem that ewes require phosphorus supplementation immediately on transfer to the lambing pastures and if practicable, on the hill in early lactation.

In a new trial, one group will remain almost entirely on the hill in order to obtain a picture of the blood status without complications from change to inbye at lambing. The main part of the 1962 trials however will comprise three other groups, one of which will be dosed with phosphorus, one with calcium and one group left without mineral supplementation. Each of the four groups will contain 20 gimmers.

Soil and herbage analyses are being carried out by the Macaulay Institute and the North of Scotland College of Agriculture.

Dentition/

Dentition of Herdwicks (J. F. Robinson)

Herdwicks, like the Blackface, are susceptible to "broken-mouth" and exhibit considerable variation between individuals in the age at which the breakdown (slackness) occurs. In consequence of delayed onset of deterioration in the teeth of the Herdwicks, however, they have sounder teeth than the Blackface at comparable ages. For example, the teeth of the Herdwicks at 5 years old are in similar condition to those in the Blackface at 4 years old.

Big-hill (J. F. Robinson)

Clinical observations on the teeth continued, mainly with the object of assessing future response to feeding steamed bone flour (in mineral boxes on the hill) commencing in February 1962.

A/Nut/4. Hogg-wintering (R. G. Gunn)

North and South Country Cheviots - Sourhope. Production recording of the three age groups in these studies continues. Weaning percentages for the current year, 1961, were as follows:-

<u>Born 1958</u>	<u>South Country</u>		<u>North Country</u>			
	<u>Hogg-wintering</u>		<u>Hogg-wintering</u>			
	<u>Away</u>	<u>Hill</u>	<u>Away</u>	<u>Hill</u>		
2nd lamb crop	108	75	86	73		
<u>Born 1957</u>	<u>H.P.</u>	<u>M.P.</u>	<u>Hill</u>	<u>H.P.</u>	<u>M.P.</u>	<u>Hill</u>
3rd lamb crop	80	88	122	91	117	127
<u>Born 1956</u>	<u>H.P.</u>	<u>M.P.</u>	<u>L.P.</u>	<u>H.P.</u>	<u>M.P.</u>	<u>L.P.</u>
4th lamb crop	75	100	73	110	113	140

The most striking trend in this table is the apparent lowering of production from the high plane reared groups relative to the low plane and in particular the Hill. This is most obvious in the 1957 age group in which the treatments created the greatest differences at 12 months.

The 1956 born age have been examined for possible tooth loss or breakdown, but up to date none has been observed in any group.

A/Nut/5. Hogg wintering and life-time productivity (R. G. Gunn)

Blackface (Schil) - Sourhope. A trend emerging from the above experiments with Cheviot hogs (A/Nut/4) is that high plane nutrition does not appear to make for sustained performance in adult life. The object of this new experiment with Blackface hogs on Schil is to impose high plane nutrition from an earlier age (3 months) when growth, notably of the skeleton, is more responsive to plane of nutrition.

In July 1961, 103 ewe lambs were selected for keeping and were split into four groups. Two groups were returned to the Hill and the other two kept in a grass field with their dams. Concentrates were fed to the latter two groups to ensure maximum lamb growth. All groups were weaned in August.

In October, one inbye group was returned to the Hill and one hill group was put with the other inbye group in a shed, where they are both receiving a high plane diet of chopped hay and concentrates. Live weights and live measurements are being used to describe the effects of four treatments between 3 and 12 months - high-high, high-low, low-high and low-low, the latter being the normal "hill reared and hill wintered", serving as a control on growth to maturity. The object will be to observe whether a difference occurs in vigour, condition and "wear" (longevity) or productive performance over the usual cycle of five lamb crops on the hill.

A/Nut/6/

A/Nut/6. Effect of lamb removal on lactation of twin-bearing ewes (J. M. Doney)

An experiment involving twin lambs, separated twins (twins/singled) and single born lambs reared on their dams under three management systems (all lambs born on inbye, one group transferred to hill immediately, second group given 8 days on inbye and third whole lactation on inbye) was carried out in 1961. Briefly results showed that twins/singled had equal growth rates (i.e. equal milk supply) to the normal singles. Increased nutrition of ewe could reduce the gap between single and twin reared lambs by increasing the rate of gain of twin lambs. This report is now "in press" in "Animal Production".

SHELTER STUDIES

Use of natural shelter by sheep (Joan Munro)

This study was carried out at Glensaugh on an exposed area of 40 acres, presenting a variety both of "heather" and "green" grazing and of aspect with gradations of natural shelter.

The study showed that sheltering behaviour of sheep is largely dependent on wind speed, notably that in excess of about 24 miles per hour. They would move into shelter at lower wind speeds if the latter were accompanied by a sudden drop in temperature (e.g. 4°F. or more). Other factors, like rain, humidity or season of year, were unimportant.

Shelter needs of hill sheep and cattle (Joan Munro)

The results of this survey in two areas, in Angus and East Perth and in the Scottish Borders, have been published in the Organisation's second report, 1961.

MANAGEMENT

A/Man/1. Controlled grazing (Park Law) - Sourhope (J. W. Peart)

Data from 1961 has shown encouraging signs of the benefit of controlled grazing to both animals and vegetation. The first phase, covering six years, was concluded and the records are now being analysed.

In November 1961 a redistribution of grazing areas was made and by using New Zealand type electric fence, six paddocks have been made for controlled grazing in future with which traditional free grazing will be compared.

Another increase in sheep numbers was made in the autumn of 1961.

PART II SUMMARY OF FLOCK RECORDS FOR 1960-61I GLENSAUGHSheep stock

The hill stock of Blackface ewes increased from 503 in November 1960 to 567 in November 1961. Fewer hoggs were retained in 1961 so that the over-all flock increase, inclusive of hoggs, is only 21. The increase of ewes occurred in the in-breeding experiment on the "Big-hill" in which the predominant age group (b. 1958) was too young for casting in 1961.

Table 1Reconciliation in Flock Numbers, by Age, 1960-61

Year of Birth	Nov. 12th		Disposals				
	1960	1961	Sold-cast	Kept for experiments	Kept for crossing inbye	Deaths	Missing
1955	6	-	-	3	2	1	-
1956	82	21	3	11	43	4	-
1957	101	41	3	15	40	2	-
1958	158	152	-	-	3	2	1
1959	156	149	3	-	1	3	-
1960	209	204	2	-	1	2	-
1961	-	166	-	-	-	-	-
Total	712	733	11	29*	90	14	1

* Includes 29 cast ewes which were retained for supplying ewes at monthly stages in pregnancy to the Rowett Institute, in connection with the investigation of foetal dentition and other studies.

Losses

The 13 ewes "dead and missing" and the 2 hoggs represent an annual loss of 2.7% of ewes and 1% of hoggs. Three ewes died in the lambing pasture of suspected pulpy kidney, and 4 died through accidents.

Table 2/

Table 2

Lambing Percentages, 1960-61

Group	Ewes to Ram	Tup Eild	Ewes Dead*	Lambs Born		Lambs Marked			Weaning %
				Total [♂]	%	Total	%	% 1960	
<u>Strains</u>									
Lanark	39	3	1	46(11)	118	41	105	97	103
Newton Stewart	40	2	-	49(11)	122	47	118	130	107
Lewis	40	1	-	49(10)	122	45	112	125	110
Perth	40	4	-	47(12)	118	44	110	98	108
<u>Inbreeding Experiment</u>									
Lambs from related sires	64	9	-	66(11)	103	49	77	80	72
Lambs from unrelated sires	56	9	1	58(7)	103	53	95	91	91
<u>Feeding Experiments</u>									
Cairn (mineral in lactation)	94	9	1	100(15)	106	84	89	111	84
Finella (protein levels)	130	7	3	151(28) ⁺	116	128	98	103	96
<u>Flock Average</u>									
Including inbred	503	42	6	566(105)	112	491	98	103	94
Excluding inbred	439	33	5	500(94)	114	442	101	107	97
Herdwicks	33	2	1	37(8)	118	34	103	60	103

* Ewes dead Nov. - end of April.

[♂] Pairs of twins in brackets.⁺ One set of triplets.

Table 3

Weights of Ewes, Hogs and Fleeces (lb.) 1960-61

Group	EWES				HOGGS			
	Nov. 1960	Weights Mar. 1961	Nov. 1961	Fleece Wt. July 1961	Nov. 1960*	Weights Mar. 1961	Nov. 1961	Fleece Wt. July 1961
<u>Strains</u>								
Lanark	102	107	103	4.1	79(16)	68	97	4.5
Newton Stewart	104	105	101	3.3	71(15)	65	91	3.7
Lewis	93	99	95	3.7	70(16)	60	88	3.7
Perth	101	104	102	4.6	76(17)	64	93	4.7
<u>Inbreeding Experiment</u>	95	103	106	4.7	69(56)	57	84	4.1
<u>Feeding Experiments</u>								
Finella (protein levels)	110	97	110	4.2	79(49)	68	101	4.7
Cairn (mineral feeding)	103	97	119	4.9	78(30)	67	101	4.9
<u>Flock Average</u>	102	102	105	4.2	74(199) [♂]	69	95	4.4
Herdwicks	95	102	-	4.5	-	-	-	-

* Numbers in brackets.

[♂] Excluding 10 hogs outwith these experiments.

Table 4

Weaning Weights (lb.) and Losses of Lambs, 1960-61

Group	Weaning Weights				Losses				
	Singles		Twins ⁺		Total Wt. Per Ewe Mated ^o	Birth to Marking	Marking to Weaning	Total	%
	No.	Wt.	No.	Wt.					
<u>Strains</u>									
Lanark	20	58.7	18	54.1	57	5	1	6	13
Newton Stewart	23	58.1	18	53.1	56	2	4	6	12
Lewis	25	54.9	18	49.3	51	4	1	5	10
Perth	23	53.7	16	52.2	53	3	1	4	7
<u>Inbreeding Experiment</u>									
From Related Sires	34	52.1	8	44.5	41	17	2	19	29
From Unrelated Sires	41	59.6	8	58.2	59	5	2	7	12
<u>Feeding Experiments</u>									
Cairn	60	59.5	18	52.5	42	16	5	21	21
Finella 1* 16% Protein	21	59.5	14	55.1	58	5	1	6	14
2 7% "	28	57.8	8	51.8	56	7	-	7	15
3 3% "	26	58.4	10	56.5	57	5	1	6	13
4 Unfed	6	63.5	6	55.0	59	4	-	4	25
Finella Total	81	59.8	38	54.8	55	21	2	23	15
<u>Flock Average</u>									
Including inbred	307	57.8	142	52.9	54	73	18	91	16
Excluding inbred	273	58.4	134	53.8	56	56	16	72	14
Herdwicks	21	57.3	12	48.9	54	5	-	5	12

+ Exclusive of twins reared as singles.

o Inclusive of twins reared as singles.

* Finella twins allowed inbye until early June.

II LEPHINMORE/

II LEPHINMORESheep stock (Blackface)

The numbers in November 1960 and 1961 are reconciled in Table 5.

Table 5Reconciliation in Numbers of Ewes by Hirsels, 1960-61

	Ewes and Gimmers Nov. 1960	Ewes Cast	Deaths* Nov./Nov.	Gimmers brought in Nov. 1961	Ewes and Gimmers Nov. 1961
Barnacarry	186	32	6 (2)	45	193
Low-end	182	33	10 (-)	45	184
Mid-hill	233	24	15 (6)	61	255
Totals	601	89	31 (8)	151	632

* Inclusive of black loss noted in brackets.

Table 6Lambing Percentages, 1960-61

	Ewes to Tup	Tup Eild	Ewes Dead	Lambs Born		Lambs Marked			% Lambs Weaned
				Total*	%	Total	%	% 1960	
Barnacarry	186	18	3	177 (16)	95	147	79	82	75
Low-end	182	21	3	158 (3)	87	138	76	82	71
Mid-hill	231	16	2	248 (35)	107	236	102	103	96
Lanark	65	11	-	64 (10)	93	64	98	57	91
Newton Stewart	66	1	-	71 (6)	108	68	103	106	98
Lewis	35	1	-	43 (9)	123	37	106	108	106
Swaledale	65	3	2	70 (10)	108	67	103	103	95
	599	55	8	583 (54)	97	521	87	90	82

* Pairs of twins noted in brackets.

Table 7/

Table 7

Weights of Ewes and Hogs and Fleeces (lb.), 1960-61

	EWES				HOGGS			
	Oct. 1960*	Apr. 1961	Oct. 1961*	Fleece	Oct. 1960	Apr. 1961	Oct. 1961	Fleece
Barracarry	103	88	106	4.0	62	63	96	3.5
Low-end	102	88	106	4.6	58	60	91	4.0
Mid-hill	100	91	102	3.9	60	67	94	3.7
Flock Average	101	89	104	4.1	60	64	94	3.7

* Excluding gimmers' weights.

Table 8

Weaning Weights (lb.) and Losses of Lambs, 1960-61

	Weaning Weights				Wt. of Lamb Weaned Per Ewe Mated	Losses of Lambs				
	Singles		Twins			Birth to Marking	Marking to Weaning	Total	%	% 1960
	No.	Wt.	No.	Wt.						
Barnacarry	118	58.5	16	52.1	43	30	7	27	21	17
Low-end	118	59.0	2	59.5	41	20	9	29	18	18
Mid-hill	159	57.3	40	48.9	53	12	13	25	10	10
Lanark	42	60.4	10	46.2	52	-	5	5	8	-
Newton Stewart	54	57.3	8	48.5	55	3	3	6	8	-
Lewis	21	53.4	12	52.9	56	6	-	6	14	-
Swaledale	42	56.2	10	47.3	51	3	5	8	11	-
	395	58.2	58	53.5	46	62	29	91	16	14

III SOURHOPE/

III SOURHOPESheep stock

The usual reconciliation of stock sheep is contained in Table 9, together with footnotes of sheep retained for special experimental purposes.

Table 9

Reconciliation of Ewe Numbers, 1960-61

Heft	Ewes and Gimmers Nov. 1960	Ewes Cast	Deaths	Gimmers Brought in Nov. 1961	Ewes and Gimmers Nov. 1961	Hoggs Kept 1961
<u>S.C. Cheviot</u>						
Fasset	131	23	5	40	143	41
Rigg	125	16	5	33	137	34
Gairs	126	16	8	30	132	33
Park Law	150	17	7	38	164	48
Auchope	187	24	22	48	189	53
Hairney Law	128	18	10	24	124	28
Total	847	114	57	213	889	237
<u>N.C. Cheviot</u>						
Hairney Law	145	27	5	24	137	35
<u>Blackface</u>						
Schil	325	3	10	63	375*	105
Flock Total	1317	144	72	300	1401	377

* Includes 35 regular age drafts (born 1955) which were retained for supplying ewes at monthly stages in pregnancy to the Rowett Institute in connection with the investigation of foetal dentition and other studies.

Regular ewe stock has increased by 49. This excludes the 35 Blackface ewes to be supplied to the Rowett.

Hoggs kept for ewe replacement has increased by 64.

Fifty-eight Cheviot draft age sheep have been retained for sheep-house experiments. These are excluded from Table 9.

Twenty-five Cheviot widders were retained on Rigg and Gairs for grazing intake studies.

Mortality in ewes and gimmers over all hefts for the year was 5.4%.

Table 10/

Table 10

Lambing Percentages, 1960-61

Hft	Ewes to Tup	Tup Eild and Abortions	Ewes Dead ⁺	Lambs Born		Lambs Marked			Weaning %
				Total*	%	Total	%	% 1960	
<u>S.C. Cheviot</u>									
<u>Southside</u>									
Fasset	131	7(0)	1	160(37)	122	129	98	84	95
Rigg	125	5(6)	2	133(21)	106	116	93	94	87
Gairs	126	6(2)	3	136(21)	108	114	90	85	86
	382	18(8)	6	429(79)	112	359	94	87	90
<u>Park Law</u>									
Free grazing	75	7(4)	1	81(18)	108	71	95	91	93
Controlled grazing	75	7(4)	2	74(12)	99	64	85	84	83
	150	14(8)	3	155(30)	103	135	90	87	88
<u>Auchoué</u>									
Selection	85	5(2)	7	87(16)	102	79	93	100	86
Control	102	5(1)	9	112(24) [†]	110	101	99	84	93
	187	10(3)	16	199(40) [†]	106	180	96	92	90
<u>Hairney Law</u>									
S.C.C.	128	12(0)	5	139(28)	109	115 ₀	90	76	84
TOTAL S.C.C.	847 ₇₄₄	54(19)	30	922(177) [†]	109 ₁₃₄	789	93	86	89
<u>Hairney Law</u>									
H.C.C.	145 ₁₃₀	10(1)	4	186(55) [†]	128 ₁₄₃	173	117	95	106
<u>Blackface</u>									
<u>Schil</u>									
Fed	164	8(1)	3	195(43)	117	177	108	93	108
Unfed	161	4(1)	2	206(52)	128	180	112	88	108
	325 ₃₀₆	12(2)	5	401(95)	123 ₁₃₁	357	110	90	108

† Abortions, separate count in brackets, are additions to tup-eild.

+ Ewes dead from November to April.

* Pairs of twins in brackets and included in total.

† Includes one set of triplets.

Table 11/

Table 11

Weights of Ewes, Hogs and Fleeces (lb.), 1960-61

Hoft	EWES					HOGGS				
	Weights			Fleece 1961	Deaths (%)	Weights			Fleece 1961	Deaths (%)
	Nov. 1960	Mar. 1961	Nov. 1961			Nov.* 1960	Mar. 1961	Nov. 1961		
<u>S.C. Cheviots</u>										
<u>Southside</u>										
Fasset	119	108	118	4.8	4	73(40)	61	108	4.5	-
Rigg	115	101	117	4.3	4	70(35)	57	103	4.5	3
Gairs	112	102	112	4.7	6	67(32)	57	101	4.5	6
Average	115	104	116	4.6	5	70(107)	58	104	4.5	3
<u>Park Law</u>										
Free grazing	117	105	121	4.8	3	74(20)	62	113	4.8	5
Controlled grazing	122	113	123	5.1	7	72(19)	59	106	4.6	-
Average	119	109	122	4.9	5	73(39)	61	109	4.7	3
<u>Auchone</u>										
Selection	110	100	111	4.3	12	64(25)	56	100	4.5	-
Control	108	99	110	4.6	12	64(24)	57	102	4.4	4
Average	109	100	110	4.5	12	64(49)	56	101	4.4	2
<u>Hairney Law</u>										
S. C. Cheviots	113	100	117	4.6	8	66(24)	55	104	4.7	-
S.C.C. AVERAGE	114	103	116	4.6	7	68(219)	58	105	4.5	2
<u>Hairney Law</u>										
H. C. Cheviots	129	122	134	4.5	3	79(14)	71	124	4.5	-
<u>Blackface</u>										
<u>Schil</u>										
Fed	106	103	114	4.1	2	69(37)	58	98	4.0	11
Unfed	107	104	112	4.0	4	70(34)	60	98	4.2	3
Average	106	103	113	4.0	3	69(71)	59	98	4.1	7

* Figures in brackets are the numbers involved.

Table 12/

Table 12

Weaning Weights (lb.) and Losses of Lambs 1960-61

Heft	Weaning Weights						Losses of Lambs			
	Singles		Twins		Wt. of lamb per ewe mated	Wt. of lamb per ewe rearing*	Birth to Marking	Marking to Weaning	Total	%
	No.	Wt.	No.	Wt.						
<u>S.C. Cheviots</u>										
<u>Southside</u>										
Fasset	76	56.3	18	48.4	52	62	31	4	35	22
Rigg	73	53.8	22	43.6	45	58	17	7	24	18
Gairs	74	51.9	22	43.7	44	56	22	6	28	21
	223	54.0	62	47.2	47	59	70	17	87	20
<u>Park Law</u>										
Free-grazing	37	52.0	30	46.0	46	62	10	1	11	13.6
Controlled grazing	42	58.2	16	49.0	46	57	10	2	12	16.2
	79	55.1	46	47.0	46	60	20	3	23	14.8
<u>Auchope</u>										
Selection	43	53.0	10	44.6	43	54	8	6	14	16
Control	56	49.5	28	41.9	44	53	11	6	17	15
	99	51.7	38	42.6	43	53	19	12	31	16
<u>Hairney Law</u>										
S.C. Cheviots	73	53.1	18	40.7	42	52	24	7	31	22
S.C.C. TOTAL	474	53.5	164	45.4	45	57	133	39	172	18.7
<u>Hairney Law</u>										
N.C. Cheviots	58	57.7	82	50.6	57	65	13	20	33	18
<u>Blackface</u>										
<u>Schil</u>										
Fed	104	59	64	46.8	58	65	18	0	18	9.0
Unfed	92	52	72	49.8	53	67	26	6	32	15.5
	196	59	134	48.4	59	66	44	6	50	12.5

* Number of ewes rearing, taken at marking.

Weaning dates:- Cheviots - 4th to 10th August, 1961.

Blackfaces - 22nd August, 1961.

B. BOTANICAL STUDIESB/Eco/1. Phytosociological studies (J. King).

Floristic and soil data from a large number of sites in the Borders and Central Highlands is in process of analysis. It is hoped that an account of the vegetation of this region in relation to environment will be completed during 1962.

B/Eco/2a. The factors affecting Rhizobium trifolii in hill soils (J. King).

The results of a survey of the effectiveness of hill soil rhizobium populations has been written up and is being submitted for publication. The results show that mean effectiveness is positively correlated with % base saturation of the soil and that this is entirely due to an increase in the frequency of occurrence of highly effective strains of rhizobia. The frequency of less effective strains does not seem to be influenced in any way by soil base status. Highly effective strains were found to be present in 37 out of the 48 sites examined and in 9 out of 12 sites with less than 40% base saturation. These results have been considered in relation to other published work and their agronomic significance indicated. Work at present in progress is of a more purely bacteriological nature - arising out of the survey and concerned with the tolerance of rhizobium strains to levels of Mn, Fe, Al etc. A sampling study is also being carried out to provide information for future field work.

B/Eco/2b. Growth and grazing value of hill grasses (R. F. Hunter, S. A. Grant)

In September 1960, 66 plants of each of the nine species Agrostis tenuis and A. canina, Festuca rubra and F. ovina, Molcus mollis and H. Lanatus, Anthoxanthum odoratum, Deschampsia flexuosa and Hardus stricta were planted out as spaced plants in a single randomised block at Glensaugh. Data have been collected on dry matter productivity, in vitro digestibility and winter greenness. In 1962 it is intended to collect data on the initiation of spring growth, dates of flowering and anthesis, leafiness (i.e. numbers of leaves on a flowering stem) and the proportion of tillers which come into flower. A more detailed study of in vitro digestibility will be undertaken at Sourhope where two further trials will be set up. A lowland species will be included for comparison and four of the above hill grasses will be used in the studies.

B/Eco/2c. Manurial response of hill grasses (J. King).

A factorial experiment is being set up to study the effects and interactions of Ca and P levels with components of the biotic factor. It is hoped eventually to be able to evaluate the effects on both vegetation and soil of intensity, frequency and distribution of grazing and of disproportionate faecal return.

B/Eco/2d. Autecology of Calluna vulgaris (L) (R. F. Hunter, S. A. Grant).

Two experiments, the Finella grazing and burning experiment and the heather defoliation trial are being continued in an investigation of the effect of frequency, season and intensity of defoliation on both the botanical composition of the heather community and on the growth habit and yield of the heather plant. The study of ecotypic differentiation in heather has now been concluded and a paper will be published in "The New Phytologist."

B/Eco/2e. Autecological studies in relation to soil water regime (J. A. Rogers, I. A. Nicholson).

It is proposed to study the response of both hill species and improved herbage species to differential soil water regimes.

A series of pot and box experiments is envisaged in which controlled water tables will be established. Current studies are concerned with problems of technique particularly with regard to the in situ recording of soil moisture and/

and the automatic control of water tables. It is hoped to begin an initial series of experiments early in 1962.

B/Eco/4a. Physiographic characteristics of hill pasture (R. F. Hunter)

The data collected by sampling a number of 6"/mile maps is now being considered by the A.R.C. Unit of Statistics at Aberdeen.

B/Eco/4b. Physical characteristics of hill environment (R. F. Hunter, S. A. Grant, G. F. Legge.)

The effect of altitude on plant growth - On Sourhope 16, and on Glensaugh and district 19 sites have been established. The sites range from 750 ft. to 2250 ft. Each site comprises four 16" cube boxes, of which two boxes are filled with one type of potting mixture, another mixture being used for the other two. In the spring of 1962 tillers of S59 red fescue and S23 ryegrass will be planted in the boxes and the growth and phenology of these grasses recorded. Data will also be collected on the soil temperature at different depths in the boxes.

B/Eco/5a. The agronomic significance of water in peat soils and its control (I. A. Nicholson, J. A. Rogers, I. S. Paterson, in collaboration with R. A. Robertson of the Macaulay Institute).

Work continues on a study of the effects of soil moisture regime on the development of both a natural community and a sown sward on peat soil. Differential treatments have been maintained for four years and clearly recognisable trends are now apparent. It is intended to discontinue recording in 1962 to enable the root responses of species to the experimental treatments to be studied.

B/Eco/5b. The effect of surface treatments on the nature of run-off from a peat catchment (I. A. Nicholson, J. A. Rogers, I. S. Paterson, in collaboration with R. A. Robertson of the Macaulay Institute).

Since January 1959 continuous meteorological and run-off data have been collected for a catchment area of approximately 20 acres. When the catchment has been adequately characterised in its existing condition, it is proposed to divide the area into a number of small catchments to which different surface treatments will be applied and their effects on run-off characteristics determined. It is intended ultimately to study both water and nutrient cycles under contrasting forms of use.

The first three years of intensive recording of the catchment in its undisturbed state was completed at the end of 1961. During the year studies were begun to determine the relationship between nutrients supplied in precipitation and removal in run-off water.

B/Eco/6. Muirburn (R. F. Hunter, S. A. Grant, G. E. Davies).

The studies previously reported are being continued. It is hoped to begin a co-operative study with the Nature Conservancy and the Macaulay Institute on the chemical aspects of muirburn.

B/GB/1. Home range behaviour in hill sheep (R. F. Hunter, G. E. Davies)

Number plates have been kept on the Alderhope Blackface ewes and hogs since May 1961. On one day per week during this period the position throughout the day of each separately identified sheep has been plotted on a map of the heft. These observations are continuing.

The heft is split into a number of "home ranges", each grazed by its own population of "resident" sheep. The performance of the sheep found within these ranges differs, one range, an area of 80 acres at the top of the Schil, having a population whose lambs and hogs are inferior in weight to those found on other ranges. The home range group is a group of families. It also appears that the retention of ewe lambs for stock ewes based as it is on the appearance of/

of the lambs, is very largely a selection of sheep coming from different parts of this 360 acre heft.

No. of ewe lambs retained from different home ranges of the Schil heft 1959-61. R. = retained, J = rejected, T = total No. of ewe lambs available for selection.

Home range	1959			1960			1961			1959-61		
	R.	J.	T.	R.	J.	T.	R.	J.	T.	R.	J.	T.
Top and fence	4	9	13	5	14	19	11	11	22	20	34	54
Middle	9	5	14	7	8	15	24	8	32	40	21	61
Bottom	3	3	6	5	4	9	13	6	19	21	13	34
Totals	16	17	33	17	26	43	48	25	73	81	68	149

The difference among the home ranges in the number of lambs retained was highly significant ($P < .01$, $\chi^2 = 10.38$ with 2 d.f.) for the cumulative table, 1959-61.

B/GB/2. The annual cycle of nutrient intake of hill sheep (J. Eadie, J. S. Black, A. Currie).

This study of intake of hill sheep is being carried out where the sheep are under a system of free-range grazing. Total daily faecal collections are made on three consecutive days in each month from nine shearling wethers which are run with the ewe stock on the Gairs heft. Prior to and during each collection period the wethers are observed in order to determine the locations from which "as grazed" herbage samples should be taken. Herbage and faeces samples are analysed for nitrogen and lignin. A bomb calorimeter has been acquired and energy values are being determined.

Digestibilities are at present being determined by the lignin ratio technique. In vitro digestibility determinations will be begun in February 1962 and it is also hoped to do in vivo determinations.

With the co-operation of Dr. Alexander of the Royal Veterinary College, oesophageal fistula have been fitted to wethers so that samples "as grazed" may be collected. It has not yet been possible to use these in the field.

The results of this study which was begun in January 1961 will be expressed in terms of the intake of digestible dry matter, digestible crude protein and digestible energy.

B/HI/1. Bracken control (G. E. Davies).

"Weedone Brackontrol" has proved unsatisfactory and interest in herbicidal control of bracken is now directed towards amino triazole which has proved fairly successful in trials by the East of Scotland College of Agriculture.

The trials, in collaboration with the Scottish Station of the National Institute of Agricultural Engineering, dealing with the control of bracken already effectively suppressed, continue.

B/HI/2. Lephinmore improvement study (I. A. Nicholson, I. S. Paterson, D. C. Currie).

The method of improvement is based on the principle that for the most efficient use of fertilisers within an area of rough grazing, improvement measures should be concentrated on the most suitable soils and on the more responsive types of vegetation (about 20% of the total area in this case). In this way the biotic pressure within the enclosure can be built up to a level where changes in the untreated area develop in response to the overall increase in grazing intensity. It is hoped to increase, in this manner, the/

the proportion of the area responsive to direct fertiliser application.

Once the stock carrying capacity of the whole enclosure has been increased it is intended to use it as a base from which to improve adjoining areas of the hill on the same principle. The enclosure of an additional area is planned for 1962.

The study is not designed as a critical experiment, but to assist in the definition of more fundamental problems involving the relationship between grazing and fertiliser application on extensively managed pasture.

B/Hi/3. Fasset improvement scheme (Sourhope) (R. F. Hunter, J. King, J. W. Peart).

The effect on stock performance of manuring 100 acres of a 250 acre heft carrying 150 ewes plus hoggs throughout the year and, in addition, 26 cows plus calves during summer is being studied. The area was limed in 1959 at the rate of 2 tons/acre ground limestone and received basic slag at the rate of 170 lb. P₂O₅/acre in 1960. Botanical and stock performance changes are being recorded.

B/Hi/4. A comparison of phosphate manures (R. F. Hunter).

Plots were put down at Sourhope in 1960 to compare various phosphatic fertilisers as sources of phosphate for hill improvement. During 1961 some effect was visible on plots receiving basic slag and superphosphate, but no response to ground mineral phosphate could be observed. This is in accordance with previous experience as it is rare for the insoluble mineral phosphate, which is the cheapest form, to produce any effect in the first year after application.

C. FARMS REPORT - 1960-611. GLENSAUGHWeather

The year was characterised by the freedom from snow during the winter, the mild, dry spring, the cool, showery summer and autumn and the lack of sunshine for most of the year. During the year rain fell on 195 days.

November 1960 was the wettest month. December was cold with severe frosts during the middle of the month. January was also cold and the only significant snowfall of the winter occurred between 24th and 26th, when 3" fell. February and March were exceptionally mild and dry. April was cool with frequent light showers. May and June were dry months but sunshine was below average. July and August were wet, sunless months. Early September was dry but later in the month showers became frequent. This cool, showery weather persisted for most of October.

Since weather recording started at Glensaugh on 1st July 1948, the year 1st November 1960 to 31st October 1961 has had the lowest total number of hours sunshine.

Weather Records, November 1960 - October 1961

Month	Rainfall Inches	Sunshine Hours	Mean Daily Air Temp. F°.
November	6.37	50.8	40.6
December	2.28	53.0	36.1
January	3.39	36.7	34.5
February	2.57	76.3	40.2
March	0.97	133.6	44.5
April	3.44	93.9	44.2
May	1.37	159.7	47.4
June	1.19	145.8	53.4
July	3.85	91.8	54.9
August	4.03	141.8	54.9
September	5.27	94.5	53.8
October	4.68	70.9	47.2
Totals	39.41	1148.8	-

<u>1959/60</u>	<u>60.08</u>	<u>1360.5</u>
<u>1958/59</u>	<u>29.02</u>	<u>1419.5</u>
<u>1957/58</u>	<u>52.48</u>	<u>1183.0</u>
<u>1956/57</u>	<u>42.26</u>	<u>1271.3</u>
<u>1955/56</u>	<u>43.64</u>	<u>1373.3</u>
<u>1954/55</u>	<u>27.84</u>	<u>1557.8</u>
<u>1953/54</u>	<u>42.53</u>	<u>1162.3</u>

Sheep/

Sheep

After a wet summer and autumn the ewes were only in fair condition at tugging time; tugging went well despite the wet weather.

Although there were a few cold, frosty spells during the winter, there were no appreciable falls of snow; this allowed the ewes to come through the winter in good fettle. No storm feeding was required by the ewes during the winter period.

Normal supplementary feeding to the pregnant ewes commenced mid-February and continued to the end of April. The Cairn Hill and Finella Hill ewes received cubed concentrate supplements, while the Big Hill ewes were folded on turnips during the mornings.

February and early March were very mild and growth started earlier than usual. As a result the ewes were in good, fit condition at lambing time. Lambing commenced on 1st April. Cairn Hill and Big Hill ewes were lambed inbye, while Finella Hill ewes were again lambed on the hill. The lambing weather was fine and mild to begin with but it became cold and wet in late April and early May. Most of the lambing fields had a good sward of grass and little difficulty was experienced through ewes being short of milk. The number of lambs born this season was considerably below average and this may be related to the spell of wet weather at tugging time. All Finella Hill ewes bearing twins were put on pasture (Loch Reseed) until 8th June, when they rejoined those on the hill.

The growth of herbage on the hills started early but received a slight check during the cold spell in late April and early May. Thereafter growth was good during the wet summer. The Cairn Hill and Big Hill ewes and lambs, coming off the inbye fields, received a slight setback on being put to the hill but they soon improved.

From 503 Blackface ewes put to the tup, 472 lambs were weaned giving a below average weaning percentage of 94. Blackface lamb weaning weights were 57.4 lb. for singles and 50.9 lb. for twins.

The 472 lambs were disposed of as follows:-

166	ewe lambs retained for stock replacements.
64	lambs retained for experiments and subsequent sale.
49	lambs sold as stores.
187	lambs for slaughter off rape and/or grass.
3	lambs sold to the slaughterhouse (casualties).
3	lambs died.
<u>472</u>	

To date 63 lambs have been sold as stores at 83/3d. and 191 graded at an average of 116/9d.

Of the 166 ewe lambs retained for stock replacements 40 are for the inbreeding experiment. All the ewe hogs are being home wintered in the Lochhills area.

The average fleece weight of 490 Blackface ewes was 4.2 lb.

In September 1961, 143 Blackface ewes were cast from the hill flock as follows:-

105 ewes retained on the farm as an inbye flock for producing cross lambs. They have been mated to three different crossing sires - Border Leicester, North Country Cheviot and Teeswater.

29 ewes were retained for a Dentition experiment in conjunction with the Rowett Research Institute and the Dental School, Manchester University.

9 ewes were sold.

As the experimental work involving the Herdwick ewes has been completed, the remaining 32 Herdwick ewes were sold at the east ewe sale in September for 46/6d. each.

Cattle

The performance of the breeding herd was again disappointing.

From 83 cows served, 76 calves were born and of these only 59 were weaned. 7 cows were cild.

The 17 calf deaths may be summarised as follows:-

Born dead	5	(1 case B. abortus).
Died soon after birth	4	(3 drowned in burn).
Died 1 - 3 weeks old	5	(4 white scour; 1 paralysis).
Died 8 weeks old	1	
Died 11 weeks old	1	(blood poisoning from abscess).
Died 26 weeks old	<u>1</u>	(hung in fence).
	<u>17</u>	

Abortion is still present in the herd and may have been responsible for some calves being born weak and premature, and failing to survive.

In addition to the above, 13 calves were bought to foster on cows which had either lost their own calves or had sufficient milk for suckling two.

16 of the strongest bullock calves (average weight 580 lb.) were sold on 30th September for an average price of £40. The remaining calves were weaned on 18th October and put straight into the cattle court for wintering.

All the heifer calves, including 14 bought-in Galloway heifer calves, were vaccinated with S 19 vaccine against abortion on 10th November.

1961 Calf Weaning Weights

Breed	Males		Females	
	No.	Av. Wt.	No.	Av. Wt.
Sh. x H.	1	406	-	-
Sh. x G.	1	511	1	448
A. x Sh. x H.	8	516	6	452
A. x Sh. x G.	1	504	2	525
Sh. x Sh. x G.	16	566	2	560
Other Crosses	25	474	9	512
1961 Av.		506 (72)		
1955-60 Av.		419 (309)		

As a result of recent policy the number of very old cows has now been reduced and the age structure greatly improved. During the year 7 cows and 1 heifer (not in calf) were sold, and 1 cow died - probably of grass staggers. 10 heifers, born 1960, were retained for herd replacements, all were served by the Aberdeen Angus bull during the summer and during their first pregnancy are receiving preferential treatment indoors.

In order to increase the number of hardy hill cows in the breeding herd and to allow for further culling of the poorer, older cows, 14 Galloway heifer calves (average liveweight - 592 lb.) were purchased at Newton Stewart on 14th October 1961 for an average price of £34.

Liveweight of Cows - 20th November 1961

Breed	No.	Average Liveweight lb.
Highland	1	1078
Galloway	3	1159
Shorthorn x Highland	16	1167
Shorthorn x Galloway	23	1238
Aberdeen Angus x Sh. x H.	14	1041
Aberdeen Angus x Sh. x G.	15	1050
Other Crosses	15	1046

During the season 3 bulls were used on the breeding herd:-

1. Shorthorn bull - "Hardiesmill Golden Glow" MAN L.16
2. Aberdeen Angus bull - "Express Post of Lethon" BLN B.19
3. Hereford bull - "Firland Dagger" KVR 10.

The Shorthorn bull purchased for Lophinmore in 1955, became unsuitable for service and was sold fat on 29th March, 1961.

The Hereford bull, (purchased in Edinburgh on 10th February 1960 for 260 guineas) was then run with the Shorthorn bull's group of cows.

The 18 month-old cattle were sold as follows:-

		Av. Wt. (lb.)	Av. Price
Sold store 13.10.61	6 Bullocks	877	£54 16/-
	7 Heifers	787	£50 8/-
Sold fat 18.9.61	5 Heifers	826	£60 8/-
Sold fat 18.10.61	9 Heifers	862	£61 12/-

Cropping

The crop acreages for 1961 were:-

Grain/

<u>Grain</u>		<u>Roots</u>		<u>Pasture</u>	
Oats	26.27	Yellow Turnips	6.83	Silage	52.00
Barley	31.45	Swedes	6.00	Hay	53.44
		Kale	5.37	Grazing only (inbye fields)	5.50
		Rape	16.00	Grazing only (outbye fields)	120.75
		Potatoes	2.00		

Grain

All grain crops brairded and grew well throughout the summer and stood well for harvesting, which commenced on 8th September 1961 and ended on 31st October 1961. Throughout the whole of that period weather conditions were extremely adverse with persistent rain and lack of drying winds; in many respects the weather for this harvest was worse than that of the previous bad season. Of the 54 days of harvest rain fell on 36; September 1961 was also the wettest September at Glensaugh since 1950. As in the previous wet season difficulty was experienced in securing grain crops undersown with Italian Ryegrass as a catch crop.

Oats

Variety Blenda. All the oat crop was cut by binder and stocked. Persistent wet weather ruined the crop in the stock and practically all the grain is of inferior quality and only suitable for feeding.

Prices for oats harvested in 1960 have again shown a downward trend, ranging from 12/6d. to 16/8d. per cwt.

Barley

Variety Ingrid. The crop promised well until disaster struck on 16th September 1961 when a severe gale stripped nearly half the ripened heads, only 3 days before combine harvesting was due to take place. 23 $\frac{3}{4}$ acres were combined by a local contractor. The grain was sold immediately subject to drying by the grain merchant. The 23 $\frac{3}{4}$ acres yielded only 380 cwts. of dried barley (16% moisture), approximately 16 cwts./acre, and sold at an average price of 17/- per cwt.

The remaining 8 acres were cut by binder, stocked and stacked (in poor condition) to be threshed at a later date.

Pasture

The pasture promised fairly well but dry conditions during May and June caused the grasses to run to seed early, affecting both bulk and quality. Throughout the summer and autumn the pastures grew well in the abundant rainfall.

Silage

Silage making commenced on 5th June 1961. The pastures ran to seed very quickly and this will affect the feeding quality of the silage. Both the steading and the Gladhills silage pits were filled - approximately 240 tons of silage. As the strong, plastic cover proved very successful last year, the Gladhills pit was again covered in this way.

Hay/

Hay

Weather conditions during late June and early July were ideal for haymaking and during this period a proportion of the crop was pick-up baled in excellent condition. Later in July weather conditions deteriorated resulting in some hay being spoiled; this hay was coled and later stacked.

Roots

Resistant varieties of yellow turnips and swedes are grown to reduce losses from finger-and-toe. Weather conditions were ideal for brairding and growth and excellent crops of healthy roots have been obtained.

The abundance of rain also suited the kale crop, which is again being harvested by forage harvester and fed to the calves in the cattle court.

The rape crops brairded well and apart from attacks by wood pigeons suffered no checks. These crops provided excellent feed for fattening lambs.

Regeneration of Upper Redstones

This area of approximately 10 acres was previously part of a rough heather hill grazing, approximately 2 acres had been old crofting land. The whole area was ploughed using the crawler tractor and the prairie buster plough. Enormous quantities of stones had to be removed both before and after ploughing. The area was disced and a fair seed-bed obtained to which the following were applied:

- (1) Ground limestone - 30 cwts./acre.
- (2) Basic Slag - 10 cwts./acre.
- (3) Turnip Fertiliser - 2 cwts./acre.

The area was then sown to rape and a useful crop obtained.

Heather Burning

Favourable weather during the spring permitted the burning of large areas of old, rank heather. Areas were burned on Finella Hill, Cairn Hill and Big Hill.

Fencing

A new fence was erected along the bottom of Lower Redstones Field to form a new enclosure (mainly rough grazing) - called Redstones Den. All the boundary fences are sound but many internal fences will have to be renewed in the near future.

Drainage

A new pipeline was laid from the cesspool at the Bows, across Upper Cottar to connect with the tile drain laid in Lower Cottar last year.

New tile drains were laid in Upper Croft (1), Brae Field (1) and Steading Field (2).

Large areas of grazing on all three hills would benefit greatly if new ditches were cut to permit proper drainage.

Buildings

There have been no alterations or additions to the farm buildings in the past year. As has been stressed in the past, there is still a pressing need for adequate accommodation for fodder and implements. This should be rectified when the new silage and storage building is erected.

Owing/

Owing to the lack of garages for members of staff, it is becoming increasingly difficult to attract good farm staff. In an effort to surmount this problem, home grown timber has been sawn and used to erect a garage/shed alongside the griever's house.

The laboratory/office/garage building near the hostel was repointed and the doorway of the garage enlarged and new doors fitted.

The area of rough ground between the hostel and the office has been cleared of roots, stones etc., levelled and sown out as a lawn.

The walls of the former dam at the steading were removed by bulldozer and the area cleared and levelled in anticipation of the new silage and storage building being erected early in 1962.

11. LEPHINMORE

Weather

November 1960 was a mixed month, with heavy rain at times. The tups went out in excellent weather - cold at night, but sunny and warm during the day. December brought gale winds and heavy hail showers with snow on the 'tops', giving a worse than average second week for the tups. The third week saw heavy snow on the high ground and sheep lying very low - amounts of snow were greater than usually experienced at this time of year. January also brought mixed weather - heavy rain at times, occasional snow, sleet and gale winds and in general was an unpleasant month. February was the wettest for a number of years, the hill and low ground being continually water-logged. Except for a few cold days at the end of the month, the weather was exceptionally mild and growth was good. March continued very mild and wet, although the second half was colder with a little snow at the end of the month. Growth, which had to date been exceptional, and without parallel in living memory, was badly checked at the beginning of April by a cold snap which lasted until the 10th and by then growth was little if any, ahead of that in 1960. The weather improved by lambing time and throughout the first fortnight conditions were fairly good although some nights of very heavy rain were experienced. On the whole it was a wetter lambing than 1960. The first ten days of May were cold and wet, but thereafter it was a warm and sunny month. June was mainly broken and wet as were July and August and only the third week of July gave a period of more than two consecutive dry days. September was a dismal continuation of July and August and October was no better being conspicuous only for the fact that it concluded a rather wet and dreary farming year.

Rainfall and sunshine records over recent years are as follows:-

Weather Records, November 1960 - October 1961/

Weather Records, November 1960 - October 1961

Month	Rainfall Inches	Sunshine Hours	Mean Daily Air Temp. F°.
<u>1960</u>			
November	7.34	59.8	43.7
December	8.98	34.0	38.6
<u>1961</u>			
January	7.92	43.2	38.6
February	6.9	48.2	43.8
March	4.79	65.3	46.2
April	5.25	104.4	47.3
May	2.77	195.4	-
June	3.68	125.9	54.7
July	5.11	102.7	55.2
August	8.63	119.4	56.3
September	8.44	82.7	55.7
October	11.74	76.9	49.8
Totals	81.55	1057.9	-

<u>1959/60</u>	<u>60.79</u>	<u>1291.6</u>
<u>1958/59</u>	<u>51.86</u>	<u>1289.4</u>
<u>1957/58</u>	<u>62.66</u>	<u>1117.6</u>
<u>1956/57</u>	<u>75.78</u>	<u>1300.7</u>
<u>1955/56</u>	<u>59.81</u>	<u>1321.7</u>
<u>1954/55</u>	<u>67.16</u>	<u>1541.7</u>
<u>1953/54</u>	<u>86.72</u>	<u>1164.1</u>

Sheep

In October 1960, the ewes on all hirsels were not in as good condition as over the last two or three years. The Mid-hill and Barnacarry sheep were fairly good but Low-End ewes were poor. For the latter, the mild winter and early spring were undoubtedly a saving grace. By mid February, Barnacarry was the best of the three hirsels with Mid-hill a close second. Low-End ewes were very lean and in the worst condition since the early 1950s. However, all sheep in the main although lean, were healthy and active. The March dipping (third week) gave a similar picture, but from then until lambing time, the flock improved tremendously, being in rising condition and extremely fit.

By October 1961, despite the very wet summer, ewe condition was good and in particular, the Low-End showed an improvement over the same period in 1960.

The overall number of lambs weaned was down by 4% over 1960 to 82%. On the Low-End a decrease from 77% to 71% was due in the main to the small number of twin births - 3 pairs as against 16 on Barnacarry and 35 on the Mid-hill. This was no doubt a reflection of the poor condition of the Low-End hirsels in November 1960. At the eild clip in June all lambs were well grown and above average but, as in 1960, growth was not maintained due to the wet and sunless summer. Wool 'rise' was good, although on the Mid-hill there was a tendency for the Swaledale crosses to be rather tight, particularly on the belly wool and the rise not so clean as in the Newton Stewart, Lanark and Lewis crosses. At shearing in August there was little to choose between the Barnacarry and Low-End lambs. Mid-hill lambs were also good and continued to show the improvement of the last two or three years. Overall, lambs gave the/

the impression of being just as well grown as last year, but lacking condition. The stock hogs in October also lacked the condition of previous years, again due to the wet season, and particularly in the case of Low-end and Barnacarry (although still well up to average) lacked the quality of last year. Low-End hogs were the most even lot - Barnacarry, while in the main just as big, had a slightly bigger 'tail'. On the Mid-hill there was little to choose between the Newton Stewart and Lanark crosses both lots being good quality hogs, but the Swaledale cross, as in previous years, continued to show too much black in the wool.

The top draw of lambs were sold as stores in August at Stirling at 72/6d. per head, a drop of 6/6d. on last year. 40 shot ewe lambs were sold at 54/- per head. In future years it is hoped to run the best of the shot ewe lambs on grass after weaning. 25 lambs were sold fat, off grass, on the hoof at Glasgow in October and realised 89/4d. per head from a carcass estimated at 26 lb. and auctioned at 1/10½d. per lb., to which had to be added a deficiency payment of 1/7d. per lb. 71 lambs were sold through the F.M.C. on 19th October, the average carcass weight being 29½ lb. at 3/5d. per lb., an average price per head of 99/11d. A further 61 lambs were sold through the F.M.C. in mid November, the average carcass weight being 26 lb. at 2/11½d. per lb., an average price per head of 78/3d. In this case, both the carcass weight and the price per lb. were depressed by the inclusion of 10 small lambs to make up the load, all of which were grade C. If these 10 lambs are excluded, the remaining 51 averaged 88/3d. per head from a carcass of 26½ lb. at 3/4d. per lb. In all 325 have been sold at 67/-, consisting of 167 store lambs at 49/6d. and 158 graded at 91/9d.

Fat Lamb Prices 1959-61

Year	On hoof			On hook (F.M.C.)		
	No.	Est. carcass Wt. (lb.)	Price per Head	No.	Carcass Wt. (lb.)	Price per Head
1959				139	29	90/6d.
1960	28	25½	73/-	85	27½	78/6d.
1961	25	26	89/4d.	133	26	90/-

These prices are before the addition of producer transport allowances and deduction of standard handling charges, and before deduction of commission dues.

Cast Ewe Prices

Year	No.	Price per Head
1959	68	29/6d.
1960	56	60/-
1961	59	51/-

Average Lamb Prices/

Average Lamb Prices

Year	No.	Wether Lambs.	No.	Ewe Lambs.
1959	212	74/-d.	75	32/6d.
1960	235	65/-d.	99	43/-d.
1961	235	79/-d.	90	42/6d.

Barnacarry and Low-End ewe hoggs were again wintered on the Island of Bute and Mid-hill at Point Farm, Ardlamont, at a charge of 35/- per head, exclusive of freight.

Supplementary Feeding

The feeding of a concentrate ration to Mid-hill and Low-End hirsels before lambing was continued. As in 1960, twice weekly feeding was practised with success. On the Mid-hill, feeding commenced on 3rd March and on the Low-End on 6th March. Feeding stopped on the Mid-hill on 14th April when the ewes were brought in-bye for lambing, but in the case of the Low-End feeding was continued until 28th April. On average, 200 ewes were fed on the Mid-hill and 140 on the Low-End. As in 1960, a number of ewes were observed lying down after feeding. It is likely that this was due this year to the exceptionally mild season, in that sheep were not going hungry as in a normal year.

Quantities fed were restricted throughout the period to the equivalent of 3 - 4 ounces per head per day. The cost of feeding, per head, exclusive of labour, but inclusive of haulage was Mid-hill 4/2d. per ewe; the Low-End 5/5d. per ewe.

Cattle

Two pure Highland cows and 21 Shorthorn x Highland cows and 13-calf heifers were over wintered. One cow died on the hill through accident by falling into a deep gully, one was barren and a third aborted in late December. Nineteen calves were born in February and March and all were reared to weaning. One cow calved in July, having broken out to a neighbour's bull the previous autumn. Nine bullock calves and seven heifer calves were sold at Stirling in September. Eight bullocks were sold at £27 10/- per head and one at £23. Two heifer calves fetched £23 per head and the remaining five £20 per head. Two heifers and one bullock calf are being court wintered for sale in the spring.

The six bullock calves retained over the winter because of poor prices experienced during 1960 (withdrawn at £19) were sold in February 1961, at an average price of £42. The remaining three which had been too small for autumn sale were sold in April 1961, for £39 per head. The 1960 calf crop was from a beef Shorthorn bull, while the 1961 crop was sired by an Aberdeen Angus bull. In view of the need for a well grown suckled calf for the autumn sales, the bull was put to the herd a month earlier in 1961 and calving will take place during January and February, 1962.

Liveweights of the cattle in November 1960, and November 1961, were:

Ags/

Age (Years)	Description	Nov. 1960		Nov. 1961	
		No.	Wt. lb.	No.	Wt. lb.
7½	Highland	2	930	2	935
5½	S x H	-	-	7	1,007
4½	S x H	7	917	5	955
3½	S x H	6	923	8	845
2½	S x H	8	885	7	865
1½	S x H	7	734	3	765
1½	S x S x H	-	-	3	783

Average weaning weights of the second cross (Shorthorn x Shorthorn x Highland) and first cross (Shorthorn x Highland) calves for 1960 and the Aberdeen Angus x Shorthorn x Highland calves for 1961, are as follows:-

Calves	S x S x H 1960		S x H 1960		A.A. x S x H 1961		A.A. x H 1961	
	No.	Wt. lb.	No.	Wt. lb.	No.	Wt. lb.	No.	Wt. lb.
Heifers	2	395	3	352	8	395	1	412
Bullocks	9	433	3	334	9	452	1	333

Arable Ground

Fields 4 South and 4 North were ploughed and cropped as follows:-

Kale, swedes and potatoes	1½ acres
Rape and Italian Ryegrass	6½ acres

Field 2 in Rape and Italian Ryegrass last year was strip grazed from 13th to 28th April by the hill cows and calves. Direct reseeding followed, after ploughing, on 25th May with pure S.22 Italian Ryegrass at 18 lbs. per acre. A cut of silage was taken at the beginning of August, the estimated yield being 4 tons per acre of made silage.

Field 6 was directly reseeded with the following mixture:-

4 lb.	S.37 Cocksfoot Certified
4 lb.	S.143 Cocksfoot Certified
4 lb.	S.51 Timothy Certified
4 lb.	Swedish Leafy Timothy
4 lb.	S.215 Meadow Fescue Certified
4 lb.	Danish Trifolium II Meadow Fescue
2 lb.	New Zealand Certified Mother White Clover
26 lb.	

Seeding/

Seeding was carried out on 14th June and the field grazed in the late summer. In the early summer the fence dividing Fields 5 North and 6 was removed and replaced by one running along the bottom of the rough scrub area in Field 6 and continuing along the top of the arable area in Field 7. Thus, Field 5 North and 2.2 acres of Field 6 are now one field as are the rough areas of Fields 6 and 7. This will make for better utilisation of these rough areas, especially in the summer months.

The first cut of hay was taken in Field 3 South on 17th May and the crop baled on 21st May. Field 5 North was baled on 2nd June and no further hay was cut until 27th June, due to adverse weather. Silage making commenced on 11th July and by 22nd July five acres had been secured. The time taken is a measure of the almost impossible weather conditions prevailing at the time. Over the season, sixty tons of good silage and twenty tons of moderate hay were made. Approximately eight tons of hay were lost due to bad weather. In the event of a severe winter or late spring, it may be necessary to purchase some hay.

Fertiliser applications were as last year, i.e., 5 - 6 cwts. of a compound (Fisons 30F) per acre, plus 2 cwts. Nitro Chalk after each cut.

The total number of cow grazing day equivalents over the year was 7,314 comprising:-

Sheep	4407
Cattle	2768
Horse	139

Mid-hill Downfall

During the winter the downfall was divided across the hill by a permanent electric fence erected by the Botany Department. Initially the current was supplied by a dry battery, but this has now been replaced by a wind generated supply. This fence of four electrified wires and a bottom earth wire has proved stockproof for both sheep and cattle. All the Mid-hill ewes were confined behind the fence immediately after shearing in August and were successfully held. The whole area of the downfall was grazed at intervals throughout the summer by the cattle herd.

Grazing Period	No. of Days	Stocking
17th May - 16th August	46	22 cows 7 heifers 19 calves
26th September - 11th October	16	25 cows

Fencing

During the winter the 'ring' fence was completed. At present materials are going out to provide a fence between Mid-hill and Low-land hirsels. A further 120 acres above the Mid-hill downfall are also being fenced and of this area approximately 30 acres are scheduled for improvement on lines similar to those carried out on the downfall. This fence will enclose a natural hollow which provides shelter on almost all sides, but particularly from the east in March and April. By next summer it is hoped to have the three hirsels in completely/

completely separate units. This will give scope, if required, for the development of three distinct management techniques. In view of the lack of a College farm in the area and the need for long term study of hill utilisation and management, the use of Lophinmore for such a purpose would be amply justified and would not interfere with normal research work which could continue unhindered within the framework of each unit.

It is also proposed to fence the Barnacarry croft of 30 acres which is now being rented from the owners. This will provide a useful lambing park and approximately 15 acres of Barnacarry hill will be included in the area, giving a total enclosure of 45 acres, much of which is easily improvable. The rough triangular area adjacent to the farm steading will also be fenced along the roadside and improved in 1962.

Proposed Forestry Commission Road

Agreement has been reached at farm level with the Forestry Commission as to the making of an access road to the downfall for the purpose of timber extraction from the Low-End plantation in later years, and for the Organisation to get better access to the hill. Initially a road beginning at the entrance to the farm steading and cutting across the rough triangular area to the farm-end corner of Field 8 and then cutting back through the top end of the tup park and finishing at the Low-End ford was proposed, but this involved some very steep gradients. Accordingly a new route is proposed, entering about quarter of a mile from the end of the arable ground on the Strachur side, travelling through the forest to a point just above the top corner of Field 8 (east side) and from there straight across the downfall to the same end point as before. This line will preserve the amenity of the farm in years to come and eliminate to a large extent the need for heavy wood lorries to pass through the farm. Although final confirmation has not been received, it is hoped that work will begin during summer, 1962 and that the road will be completed by the summer of 1963.

Heather Burning

Due to the mild wet weather and spring no heather burning was possible in 1961.

Farm Buildings

During the winter all electrical circuits throughout the farm were re-earthed on the advice of the Hydro-Electric Board. This was necessary due to slight shocks being felt in the water supply, particularly in the water trough in the cattle court. During frosty weather the area surrounding the court became live to such an extent that the over-wintered storks were unable to pass over it without being thrown to the ground.

The fank, which was originally constructed with untreated wood, is now in need of extensive repairs, and this work is in hand.

Weather

Although intermittent light falls of snow were experienced from early December 1960 until early February 1961, the winter was notable for the lack of snow and freedom from severe frosts. Late winter and spring temperatures were higher than average, but summer temperatures were lower than usual. Ground minimum temperatures below 32°F. were recorded on occasions each month of the year. The total number of hours of sunshine was the lowest recorded at/

at Sourhope and the total rainfall was also well below average. This combination gave cool, overcast conditions with frequent small amounts of rain and this weather prevailed until September which was the warmest month of the year.

Weather Records, November 1960 - October 1961

Month	Rainfall Inches	Sunshine Hours	Mean Daily Air Temp. F ^o .
<u>1960</u>			
November	3.00	48.4	40.5
December	2.63	53.8	36.0
<u>1961</u>			
January	4.81	31.6	35.2
February	2.20	68.0	40.6
March	0.80	85.3	44.1
April	1.81	98.9	45.3
May	0.82	175.4	48.1
June	1.68	139.1	52.9
July	2.42	112.0	54.3
August	3.10	147.5	55.4
September	2.27	123.3	55.8
October	3.47	106.1	47.9
Totals	29.01	1189.4	

<u>1959/60</u>	<u>47.7</u>	<u>1296.7</u>
<u>1958/59</u>	<u>21.0</u>	<u>1570.7</u>
<u>1957/58</u>	<u>33.7</u>	<u>1372.7</u>
<u>1956/57</u>	<u>32.8</u>	<u>1328.2</u>
<u>1955/56</u>	<u>37.0</u>	<u>1406.5</u>
<u>1954/55</u>	<u>26.9</u>	<u>1673.6</u>
<u>1953/54</u>	<u>39.9</u>	<u>1220.8</u>

Sheep

All sheep stocks were in excellent condition at November 1960 and after the mild winter came to lambing fit and in good order. Percentage lamb crops were appreciably higher than in former years and the weaning percentages were: Blackfaces 108%, North Country Cheviots 106%, Border Cheviots 89%. This was mainly due to increased numbers of twins born and reared. At the pre-tupping weighing 1961, the sheep had the highest average liveweights so far recorded.

Regular sheep stocks on the hill continue to increase in numbers and in addition there are 60 Cheviot draft ewes in fields plus 35 B.F. draft ewes retained for experimental work. 25 Cheviot wedders, 1½ and ½ year old, are on the Rigg and Gairs in addition to the regular flocks.

A slight increase of about 1% in sheep deaths has been recorded. This was due to an outbreak of Hypomagnesaemia in the Auchope flock at lambing time. This occurred in ewes on the hill and amongst ewes with twins in fields. New cases ceased to occur after anti-tetany cubes were fed to Auchope/

Auchope flock for one week.

On the whole, satisfactory prices were obtained for store lambs, but the increased number of twins reduced the number of "top" lambs.

Principal prices were:-

Date Sold	Breed and No.	Class	Assessed Quality at Weaning Time	Price (Shillings).
10th August.	50 S.C.C.	Wedder	1st	85
	55 S.C.C.	Wedder	2nd	76
	24 N.C.C.	Wedder	1st	94
11th August	43 S.C.C.	Ewe	3rd	51
24th August	60 B.F.	Wedder	1st	70
	40 B.F.	Wedder	3rd	53
	45 B.F.	Ewe	3rd	50
21st Sept.	55 S.C.C.	Wedder	2nd	90
	27 N.C.C.	Wedder	2nd	84
	39 N.C.C.	Ewe	2nd	86
1st Nov.	38 S.C.C.	Ewe	3rd	82

The averages for store lambs sold were:-

619 Cheviot lambs 64/6d.
 207 Blackface lambs 52/9d.
 64 Cheviot X B.F. lambs 51/9d.

32 Cheviot lambs were graded at 94/3d., after being on an indoor feeding experiment.

S.C.C. draft ewes 6 year old 70/-
 S.C.C. draft ewes 7 year old 60/-
 N.C.C. draft ewes 6 year old 72/-

All B.F. drafts retained for experimental needs.

The trend of prices increasing as the season advances is typical of recent years.

Cattle

The main herd of cows and in-calf heifers were again wintered on the near end of Hairney Law hill. Ten in-calf Galloway cows were wintered and calved on Auchope hill and received concentrates only as supplementary to the hill vegetation. This was again successful and reduced the cost of winter feeding considerably. During and after calving all outwintered cows were fed anti-tetany cake and no cases of Hypomagnesaemia were observed. In an attempt to get better grown calves for the autumn sales, the calving date was again brought forward. Though some cows calved earlier, the majority calved at their usual time, resulting in a protracted calving period and producing more varieties in the calves at weaning. Calving has again been/

been brought forward and is expected to start at the end of January 1962.

In 1961 all Blue Greys were mated to the A. Angus bull and all Galloways to the White Shorthorn. The Galloway bull was sold fat and not used for service. Except for two calves lost at birth, there were no cattle deaths. Two Galloway cows and one Blue Greys cow were cild.

Four Galloway bullocks bid to £19 in October 1960 were withdrawn from the sale, and after wintering, sold for £40. At the autumn sales 1961, calves sold to £40 and averaged £33. Three Blue Greys cast cows (born 1947) were sold for £50 each and two Galloway cast cows, one of which was lame, averaged £28 10/-.

In addition to eight heifer calves retained for stock, fifteen heifer and bullock calves were retained for wintering.

Cattle Weights, October 1961

Cows			Sire of Calves	Weaning Weights of Calves			
Class and Breed	No.	October 1961 Wt.(lb.)		Male		Female	
				No.	Wt.(lb.)	No.	Wt.(lb.)
Galloway Cows	22	1136	Galloway	2	499	4	430
			White Shorthorn	8	453	4	450
Blue-Grey Cows	21	1196	Aberdeen Angus	4	529	10	499
			White Shorthorn	-	-	1	373
Aberdeen Angus Grass Cows	3	1332	-	-	-	-	

Heifers in Calf

Galloway	4	1013
Blue-Grey	7	1077

Bulling Heifers

Galloway	6	800 *
Blue-Grey	5	922 *

* Weighed 12th January 1962.

In November 1961, there were on the farms for wintering:-

Cows and In-calf heifers	52
Bulling heifers	11
Heifer calves for the herd	8
Calves for sale in spring	17
Bulls	2

This/

This is a total of 90, compared with 84 in 1960, there being 2 more cows, 5 more young stock and 2 bulls instead of 3.

Huirburn

Small areas were burnt on all hefts except Fasset and Park Law. The burning on the Gairs, aided by efficient shepherding, had an obvious effect on the grazing pattern of the sheep.

Cropping

A total of 7,000 bales of hay were made from 50 acres cut, yielding an estimated 130 tons. The Lister Moisture Extraction Unit was extensively used and under the cool weather conditions prevailing, it was considered to be a valuable aid to securing hay in good condition. The change in farm management personnel during hay-time interfered with the recording of drying time and fuel consumption, but this will be done in 1962.

Nine acres of "Blenda" oats were grown and harvested under ideal conditions.

Buildings

The new office and laboratory building was completed and occupied in April 1961.

A new four bay hay shed was erected, but even with this additional accommodation, the oat straw had to be stacked outside.

Authorised maintenance work to Auchope house and steading has not yet started, but it is expected to be completed within this financial year.

Fences

Because of the difficulty in procuring suitable labour, no major work has been done to stone walls requiring repair. This is a serious setback to the programme of renewal and maintenance of fences and dykes. The rebuilding and stock-proofing of the Sourhope/Mowhaugh march dyke, which was started three years ago is still not completed. The Gairs field and the Sourhope/Auchope march dykes are now the major items demanding urgent attention, but maintenance is also required of dykes already repaired.

Water Tank

The new water holding tank on Fasset has been extensively repaired, waterproofed and reinforced.