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FARM ECONOMICS BRANCH, KING'S COLLEGE,
NEWCASTLE UPON TYNE

COSTS and RETURNS FOR BEEF STORE CATTLE REARED FROM SUCKLING HERDS IN NORTHUMBERLAND.

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The Farm Economics Branch acknowledges its indebtedness to the farmers whose willing co-operation throughout this investigation has made available to the industry at large, the fund of information summarised in this series of reports on the rearing of beef store cattle.

The contacts made in the course of the inquiry and the courtesies extended to members of the staff of the Branch are greatly appreciated.

Comments and inquiries arising out of the reports should be addressed to:-

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This is the third and final report in a series dealing with financial and economic aspects of store cattle raising from Cross-bred and Galloway herds in Northumberland. The investigation was begun in November 1948 and was primarily concerned with the production of weaned calves suckled by their dams. While a proportion of the calves reared were sold after weaning, some were carried over to be finally graded or sold as stores at older ages. By continuing the investigation over three years, it has been possible to examine calf-rearing costs in three successive years, and further rearing costs, in annual stages, for the beasts carried on, after weaning, on the farms producing them. It was not found possible to follow up the subsequent history of cattle sold off the farms in the course of the investigation.

The contributing farms are situated in three districts of Northumberland. One group is in the district around Wooler in the north of the county, where the farms generally are mainly highly fertile with considerable arable cropping, supported by strong cattle and sheep enterprises. The other two groups are mainly upland or hill farms situated in the south of the county, one group being in the region of Hadrian's Wall between Corbridge and Greenhead, the other in and around the North Tyne valley between Simonburn and Falstone.

The more fertile farms in the northern group rely mainly on Irish Aberdeen Angus x Shorthorn cows and Aberdeen Angus bulls and many of the calves bred are reared and fattened on the same farms. The farms in the other two groups have mainly Galloway cows with either a Galloway or a White Shorthorn bull, breeding pure Galloway or Blue Grey calves, most of which are eventually sold as stores.

As the breeds and systems used are not completely uniform in each district, the grouping of results has been made according to breed rather than by districts.

Further details of the systems of rearing practised, their place in the cattle enterprise and in the system of farming on the farms studied, were given in previous reports, to which reference should be made for particulars of the general background to the investigation.*

Results are dealt with in three sections:-

(i) Costs and returns from weaned calves dropped in the spring of 1951.

(ii) Costs and returns from store cattle reared to approximately 18 months.

(iii) Costs and returns from store cattle reared to approximately 2½ years.

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* Farm Economics Branch Reports G 33 and G 37.

ACCOUNTANCY

The following notes indicate the methods used in calculating the various items of cost.

(1) Feeding. Bought foods have been charged at the actual cost delivered to the farm. In calculating charges for home-grown foods, the following uniform rates have been used:-

Hay	4/6d. per cwt.	Arable Silage	2/4d. per cwt.
Straw	1/9d. " "	Grass Silage	1/10d. " "
Turnips	2/2d. " "	Oats	11/6d. " "
Mangolds	2/6d. " "	Beans	29/6d. " "
Kale	2/2d. " "	Barley	11/6d. " "

It was not possible to investigate the costs of growing these crops on each individual farm and therefore uniform rates of charge have been used. As a result, individual farm results do not reflect the whole farm to farm ranges in crop production costs which are known to exist. The uniform rates of charge used are based on fodder crop costs separately obtained by the Farm Economics Branch on lowland farms, on which costs may be somewhat lower than on the upland farms included in this investigation.

(2) Grazing Costs include rent, manuring, cultivations, thistle cutting and share of the cost of establishing leys. One third of all the hay acreage was treated as grazing. In the allocation of total grazing costs among the various types of grazing animals, the following conversion factors were used:-

Cattle over 2 years	= 1	Rams, Ewes and Hoggs	= $\frac{1}{4}$
Cattle 1 to 2 years	= $\frac{3}{4}$	Lambs	= 1/10th
Cattle under 1 year	= $\frac{1}{4}$	Horses	= 1

(3) Labour. All paid labour has been charged at the actual cost, including perquisites. Unpaid labour, including that of the farmer, has been charged at the estimated cost of equivalent paid labour.

(4) Miscellaneous Costs. Included here are the costs for horses and tractors carting food (charged at 1/2d. per hour and 3/0d. per hour respectively), veterinary expenses, haulage of cattle to or from market and auctioneer's commission.

(5) Overheads. Estimates of total overhead costs other than those attributable directly to particular enterprises were obtained in 1948/49 on 16 farms with Galloway herds and 11 farms with Cross-bred herds. A share of these was charged to the cattle enterprises in proportion to the distribution of labour costs on the farms from which the overhead costs were obtained. The same charge per £1 labour has been made in succeeding years. On other farms the average cost per £1 labour so obtained has been charged, separate averages being calculated for farms with Galloway herds and with Cross-bred herds respectively.

This arbitrary method of determining the amount of an overheads charge against the suckling herds is open to the objection that it makes the share of overheads directly proportional with the wages charged against the cattle. Since 1948/49 appreciable advances have occurred in wages rates. Other items classed as overheads have not changed in like proportion.

(6) Costs of littering have been excluded, as have costs of cleaning out of courts and credits for farmyard manure.

The foregoing notes apply to all sections of the investigation. The following are concerned only with the breeding cows.

(7) Herd Maintenance. Valuations of cows have been maintained at the same per head figure as at the initial opening valuation for this investigation made at November 1st 1948. Additional cows introduced during the period of the investigation have been valued at cost.

Cows bought include first calving heifers bought during the cost period or during 1949/50. Purchased cows and heifers have been brought into the herd at their original cost, plus an allowance for keep up to October 31st 1951, unless bought in calf, when they have been brought into the herd at their purchase price at the date of purchase. Appropriate deductions from cost have been made for Hill Cattle Subsidy received, or for the rearing of calves brought onto the farms with their dams, in respect of cows treated as not entering the herd before October 31st 1951.

Heifers transferred in are home-bred heifers or heifers bought as calves and are entered at accounted or estimated cost of production.

Cows transferred out are those taken from the herd for feeding or for milking.

(8) Bull Cost includes feeding, grazing and depreciation but not labour, which is included with total labour.

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(9) Attention is directed to the fact that the results presented throughout the report are averages. This means that, under the various groupings of cattle and farms, all costs and returns for all herds in a group are totalled, whatever differences there may be between farm and farm in management practices, and the totals are then divided by the numbers of cows, calves, yearlings, or two year-old cattle, as the case may be. The effect is that each item of cost and income (whether or not it affects all herds) is treated as though it were spread evenly, beast by beast, throughout its group.

For example, in the table on page 5, it is stated that there was an average expenditure of 27/- on purchased feeds per breeding cow amongst 17 Cross-bred herds comprising 1012 cows. In fact, there were 7 of these 17 herds for which no purchased feeds were bought. The average treats the purchased feed bills for the 10 herds which bought feeds, as though each cow in the 17 herds got an equal share of these feeds.

All other group averages are to be taken in the same sense.

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PART I

COSTS AND RETURNS OF REARING CALVES TO WEANING 1950/51

Results in 1950/51 were obtained from 40 herds on 36 farms. These have been grouped thus:-

Group A. Cross-bred herds

17 herds. 1012 cows. Average per herd 59.5 cows.

Group B 1. Galloway Cows, in-wintered

15 herds. 252 cows. Average per herd 16.8 cows.

Group B 2. Galloway Cows, out-wintered

8 herds. 149 cows. Average per herd 18.6 cows.

One farm had both a Cross-bred herd and a Galloway herd, and three farms had each two Galloway herds, one in-wintered, the other out-wintered.

For purposes of comparing results, the unit of comparison used may be either (a) the breeding cow or (b) the calf. The cow is probably the better basis, since the herd itself is the standing unit of enterprise and problems of farm organization arising from calf production are determined largely by the size of the herd and its feeding and labour requirements. Since cows and calves are brought up together the costs recorded are herd costs and these may be divided either by the number of cows, or by the number of calves reared. If cows prove barren and are not disposed of, their cost of maintenance has to be recovered from the sales of calves. This means that herd costs per calf will include an element of overhead cost represented by the burden of carrying cows without calves of their own.

Results are given for both methods of comparison, i.e., (a) Per Breeding Cow and (b) Per Calf Reared.

Looking at the results Per Breeding Cow, comparatively, it is evident that (a) the scale of costs was higher for the Cross-bred herds and (b) the output of calves from these herds had higher value, either on sale or valuation, than for the other classes of herds.

It may reasonably be asked, however, what is the practical bearing of this kind of comparison. The choice between running a Cross-bred or a Galloway herd turns very much on the quality of the land and the situation of the farm, and, as pointed out earlier, the Cross-bred herds from which these results come, are kept on appreciably better average land than are the Galloway herds. To a farmer whose land will not adequately support a Cross-bred herd, it may be of little interest to know that such herds, on average, earn bigger margins per cow than his own Galloway herd.

He is more likely to be interested in knowing how the net results from his herd compare with those from other herds kept on land similar to his own, and it can at once be said that, within each group of herds taken by itself, there is a wide range in the net margin per cow between herd and herd. The individual farmers who have participated in this investigation have therefore been supplied with the figures for their herds, which they can compare with the appropriate group averages given in this report. For the infomation of all readers the ranges in herd costs, returns and margins per cow are summarised on page 6. In no case is there a clear modal or dominant point in the range and the significance of the averages should be interpreted in this light.

TABLE 1. AVERAGE COSTS AND RETURNS PER BREEDING COW 1950/51

	A CROSS BRED HERDS Average on 1012 Cows	B GALLOWAY HERDS Wintered in Average on 252 cows	B GALLOWAY HERDS Wintered out Average on 149 cows	B ALL GALLOWAY HERDS Average on 401 cows
	£. s.	£. s.	£. s.	£. s.
Bull Cost	1. 5.	15.	1. 0.	17.
Foods: Bought ...	1. 7.	1. 4.	13.	1. 0.
Home grown	6. 5.	5.12.	4. 7.	5. 2.
Grazing	4.11.	2. 1.	2.14.	2. 6.
Labour	1.17.	2.11.	2. 8.	2.10.
Miscellaneous ...	1. 0.	6.	16.	10.
Overheads	16.	19.	18.	18.
Total	17. 1.	13. 8.	12.16.	13. 3.
Herd Maintenance	1. 7.	2. 6.	3.18.	2.18.
TOTAL HERD COSTS	18. 8.	15.14.	16.14.	16. 1.
Add Costs on Calves:				
Replacements	2.	1.	3.	2.
Selling Expenses	5.	2.	2.	2.
TOTAL COSTS	18.15.	15.17.	16.19.	16. 5.
RETURNS:				
Calves Sold or Retained	26.12.	18.16.	18. 8.	18.13.
MARGIN	7.17.	2.19.	1. 9.	2. 8.
Add Credits:				
Sundry	1.	6.		4.
Hill Cattle Subsidy	18.	4. 8.	4. 4.	4. 6.
PROFIT	8.16.	7.13.	5.13.	6.18.

TABLE 2. RANGE IN TOTAL COSTS PER COW. 1950/51

Nos. of Herds for which the Cost is within the stated limits

Range and under	£6 £8	8 10	10 12	12 14	14 16	16 18	18 20	20 22	22 24	24 & over
A. Cross-bred Herds	-	1	1	1	3	1	3	3	2	2
B. Galloway Herds	1	-	4	2	2	4	4	3	2	1

TABLE 3. RANGE IN RETURNS PER COW. 1950/51

(Calves sold and retained)

Nos. of Herds for which returns were within the stated limits

Range and under	£8 10	10 12	12 14	14 16	16 18	18 20	20 22	22 24	24 26	26 28	28 30	30 32
A. Cross-bred Herd	-	-	-	-	1	1	-	2	3	5	3	2
B. Galloway Herds	2	1	1	1	6	1	4	4	1	1	-	1

TABLE 4. RANGE IN NET MARGINS PER COW. 1950/51

Nos.of Herds for which Net Margin was within the stated limits

	Loss				Profit										
Range and under	£6 8	4 6	2 4	0 2	0 2	2 4	4 6	6 8	8 10	10 12	12 14	14 16	16 18	18 20	20 22
A. Cross-bred Herds	-	-	-	-	2	2	1	3	1	1	4	2	-	-	1
B. Galloway Herds	2	-	2	-	3	3	3	2	-	2	2	2	-	1	1

From the management standpoint, the three items which have the strongest effect on net results are (i) the herd maintenance cost, (ii) feeding costs, and (iii) the calving percentage. Some further examination of these points can be made. As regards herd maintenance, discussion is deferred to pages 12 and 13, where three consecutive years' experience are reviewed. Details of Feeding Costs per cow, are given in Table 5 on page 7.

The table provides clear evidence of the extent to which the farms on the poorer land, where Galloway cows are kept, rely upon hay, in contrast with the more varied diet which is possible on the farms carrying the Cross-bred herds. In the upland areas where the Galloway herds are found, the farmers' attitude towards the hay crop and the chances of the haymaking season are of critical importance in determining the progress of the year's calf crop. Within the period covered by these investigations two exceptional seasons were experienced, one of severe drought and one of abnormal rain. Both prejudiced the winning of adequate supplies of good hay.

TABLE 5. ANALYSIS OF FEEDING COSTS PER COW

	A CROSS BRED HERDS Average on 1012 Cows		B GALLOWAY HERDS Wintered in Average on 252 Cows		B GALLOWAY HERDS Wintered out Average on 149 Cows		B ALL GALLOWAY HERDS Average on 401 Cows	
Home Grown	Cwt.	£. s.	Cwt.	£. s.	Cwt.	£. s.	Cwt.	£. s.
Hay	10.7	2. 8.	23.2	5. 5.	17.2	3.18	21.0	4.14.
Straw	13.1	1. 3.	2.9	5.	4.0	7.	3.3	6.
Roots & Green Crops	17.6	2. 1.	0.4	1.	0.6	1.	0.5	1.
Arable Silage .	2.0	5.						
Grass Silage ..	1.3	2.						
Total		5.19.		5.11.		4. 6.		5. 1.
Cereals	0.6	6.	0.1	1.	0.1	1.	0.1	1.
Total Home-grown		6. 5.		5.12.		4. 7.		5. 2.
Bought								
Hay	0.6	9.	0.6	8.	0.5	8.	0.5	8.
Straw			1.8	10.	0.5	3.	1.1	8.
Roots			0.1	1.				
Total		9.		19.		11.		16.
Dried Beet Pulp	0.3	4.			0.1	1.		
Concentrates ...	0.5	14.	0.2	5.		1.		4.
Total Bought ...		1. 7.		1. 4.		13.		1. 0.
Total Foods		7.12.		6.16.		5. 0.		6. 2.

Calves

Amongst the Cross-bred herds, 918 calves were reared from 1012 cows (91%). 922 calves were born. 23 of these died early and 19 were replaced by purchased calves. 4 were not replaced.

Amongst the Galloway herds, 319 calves were reared from 401 cows (80%). There were 5 replacements of calves which died.

The disposals of the calves are detailed in Table 6.

TABLE 6. DISPOSAL OF CALVES

	A. CROSS-BRED HERDS		B. GALLOWAY HERDS	
	No.	Average Price	No.	Average Price
SOLD:		£. s.		£. s.
Bullocks	249	34. 6.	47	28. 0.
Heifers	293	24. 9.	50	20. 3.
Total Sold	542	28.19.	97	23.19.
RETAINED:				
Bullocks	208	31.18.	104	25. 1.
Heifers	165	27.10.	117	21.14.
Total Retained	373	29.19.	221	23. 5.
TRANSFERRED:				
Heifers	3	7. 7.	1	6. 0.
TOTAL CALVES REARED	918	29. 6.	319	23. 9.

59% of the calves from Cross-bred herds were sold after weaning, compared with 30% of those from Galloway herds.

Most of the Cross-bred calves were born in January, February and March and at weaning, the average age would be greater than that for the Galloway and Blue Grey calves, most of which were born in April and May.

The results so far presented are in terms of Per Breeding Cow. In the following table, the same total herd costs are presented in terms of Per Calf Reared. The table calls for little further comment in view of what was said at the beginning of this section regarding the choice of a basis for comparing farm to farm results. It can be said that the farm to farm ranges in the costs, returns and margins per calf are as wide as those already given for the per cow results.

TABLE 7. AVERAGE COSTS AND RETURNS PER CALF REARED

	A CROSS BRED HERDS Average on 918 calves	B GALLOWAY HERDS Wintered in Average on 204 calves	B GALLOWAY HERDS Wintered out Average on 115 calves	B ALL GALLOWAY HERDS Average on 319 calves
	£. s.	£. s.	£. s.	£. s.
Bull Cost	1. 7.	19.	1. 6.	1. 1.
Foods: Bought ...	1. 10.	1. 10.	17.	1. 5.
Home grown	6. 18.	6. 18.	5. 12.	6. 9.
Grazing	5. 1.	2. 11.	3. 10.	2. 18.
Labour	2. 0.	3. 3.	3. 2.	3. 3.
Miscellaneous ...	1. 2.	8.	1. 1.	12.
Overheads	17.	1. 3.	1. 3.	1. 3.
Total	18. 15.	16. 12.	16. 11.	16. 11.
Herd Maintenance	1. 10.	2. 17.	5. 1.	3. 13.
TOTAL HERD COSTS	20. 5.	19. 9.	21. 12.	20. 4.
Add Costs on Calves:				
Replacements.	3.	1.	3.	2.
Selling Expenses	5.	2.	3.	3.
TOTAL COSTS	20. 13.	19. 12.	21. 18.	20. 9.
RETURNS:				
Calves Sold or Retained	29. 6.	23. 4.	23. 16.	23. 9.
MARGIN	8. 13.	3. 12.	1. 18.	3. 0.
Add Credits:				
Sundry	1.	8.		5.
Hill Cattle Subsidy	1. 0.	5. 9.	5. 8.	5. 9.
PROFIT	9. 14.	9. 9.	7. 6.	8. 14.

Three Years' Results from an Identical Sample of Herds

It is now convenient to set the 1950/51 results in perspective against the results of the two preceding years. For this purpose the same herds are taken each year - an identical sample. The term identical only means that the herds were on the same farms throughout and consisted of the same kind of cows. In fact, as the table shows, they were herds steadily increasing in size. Thus the farms interested in Cross-bred herds increased their herd numbers by 30% and the farms interested in Galloways increased their herds by 11% over the three years. The results, Per Breeding Cow and Per Calf Reared, are set out on pages 10 and 11.

TABLE 8.

AVERAGE COSTS AND RETURNS. PER BREEDING COW. FOR THREE YEARS

	A. CROSS BRED HERDS			B. GALLOWAY HERDS		
	1948/49 Av. on 781 Cows	1949/50 Av. on 938 Cows	1950/51 Av. on 1012 Cows	1948/49 Av. on 361 Cows	1949/50 Av. on 382 Cows	1950/51 Av. on 401 Cows
	£. s.	£. s.	£. s.	£. s.	£. s.	£. s.
Bull Cost	19.	19.	1. 5.	13.	15.	17.
Feeding Bought ...	8.	15.	1. 7.	15.	17.	1. 0.
Home grown	5.16.	6. 0.	6. 5.	4. 0.	4.12.	5. 2.
Grazing	4. 7.	4.16.	4.11.	2. 9.	2.14.	2. 6.
Labour	1.13.	1.13.	1.17.	2.12.	2.10.	2.10.
Miscellaneous	13.	14.	1. 0.	8.	8.	10.
Overheads	15.	15.	16.	19.	18.	18.
TOTAL	14.11.	15.12.	17. 1.	11.16.	12.14.	13. 3.
Herd Maintenance	19.	2. 4.	1. 7.	2. 6.	2. 6.	2.18.
TOTAL HERD COSTS .	15.10.	17.16.	18. 8.	14. 2.	15. 0.	16. 1.
Costs on Calves:						
Replacements ..	1.	3.	2.		2.	2.
Selling Expenses	7.	7.	5.	2.	2.	2.
TOTAL GROSS COSTS	15.18.	18. 6.	18.15.	14. 4.	15. 4.	16. 5.
CALVES SOLD OR RETAINED	26. 7.	23.14.	26.12.	17.11.	17.11.	18.13.
MARGIN	10. 9.	5. 8.	7.17.	3. 7.	2. 7.	2. 8.
Add Credits:						
Sundry		1.	1.	1.	3.	4.
Hill Cattle Subsidy .	16.	14.	18.	3.17.	3.14.	4. 6.
PROFIT	11. 5.	6. 3.	8.16.	7. 5.	6. 4.	6.18.

The general trend in costs was upwards. Apart from the item Herd Maintenance, which is discussed below, all items of cost advanced in some degreewith the Cross-bred herds. With the Galloways, the increases were confined to the purchased and home-grown food items, and in 1950/51 to the Herd Maintenance charge.

When the annual output from calves is credited to the cows, the margins per cow show appreciable variations from year to year. In 1949/50 the average margin per cow in the Cross-bred herds was almost halved, compared with the previous year. There was improvement in 1950/51 but the margin in the latter year did not recover to the level of 1948/49. Similar movements, but with a much narrower range and at a lower financial level, occurred amongst the Galloway herds.

TABLE 9.

AVERAGE COSTS AND RETURNS. PER CALF REARED. FOR THREE YEARS

	A. CROSS BRED HERDS			B. GALLOWAY HERDS		
	1948/49 Av. on 742 Cvs.	1949/50 Av. on 867 Cvs.	1950/51 Av. on 918 Cvs.	1948/49 Av. on 280 Cvs.	1949/50 Av. on 319 Cvs.	1950/51 Av. on 319 Cvs.
	£. s.	£. s.	£. s.	£. s.	£. s.	£. s.
Bull Cost	19.	1. 0.	1. 7.	16.	18.	1. 1.
Feeding Bought ...	9.	16.	1.10.	19.	1. 0.	1. 5.
Home grown	6. 2.	6.10.	6.18.	5. 3.	5.11.	6. 9.
Grazing	4.11.	5. 4.	5. 1.	3. 3.	3. 4.	2.18.
Labour	1.15.	1.15.	2. 0.	3. 7.	3. 0.	3. 3.
Miscellaneous	14.	16.	1. 2.	11.	9.	12.
Overheads	16.	16.	17.	1. 5.	1. 2.	1. 3.
TOTAL	15. 6.	16.17.	18.15.	15. 4.	15. 4.	16.11.
Herd Maintenance	1. 0.	2. 8.	1.10.	2.19.	2.15.	3.13.
TOTAL HERD COSTS .	16. 6.	19. 5.	20. 5.	18. 3.	17.19.	20. 4.
Costs on Calves:						
Replacements ...	1.	3.	3.	-	2.	2.
Selling Expenses	8.	8.	5.	3.	3.	3.
TOTAL GROSS COSTS	16.15.	19.16.	20.13.	18. 6.	18. 4.	20. 9.
CALVES SOLD OR RETAINED	27.14.	25.13.	29. 6.	22.12.	21. 1.	23. 9.
MARGIN	10.19.	5.17.	8.13.	4. 6.	2.17.	3. 0.
Add Credits:						
Sundry	-	1.	1.	2.	3.	5.
Hill Cattle Subsidy	17.	15.	1. 0.	4.19.	4. 9.	5. 9.
PROFIT	11.16.	6.13.	9.14.	9. 7.	7. 9.	8.14.

It was mentioned earlier, and Tables 8 and 9 confirm that the charge for herd maintenance was one of the items mainly responsible for the year to year fluctuations in costs and profit margins. The calculation of the Herd Maintenance charge is therefore set out in detail on pages 12 and 13, for Cross-bred and Galloway herds respectively.

TABLE 10.

HERD MAINTENANCE - CROSS BRED HERDS

	1948/49		1949/50		1950/51	
	No.	£. s.	No.	£. s.	No.	£. s.
Opening Valuation Cows	761	22604. 0.	897	28593. 5.	951	31231. 0.
Cows Bought	180	7871. 9.	172	7261.15.	148	5889.19.
Heifers transferred in	3	96. 0.	2	62. 0.	36	1330.12.
Total	944	30571. 9.	1071	35917. 0.	1135	38451.11.
Cows Sold	26	836. 4.	80	2250. 3.	108	3700. 3.
Cows transferred out .	13	397. 0.	13	367.10.	20	699.12.
Cows Died	8	15.	27	2. 6.	26	-
Closing Valuation Cows	897	28593. 5.	951	31231. 0.	981	32688.10.
Total	944	29827. 4.	1071	33850.19.	1135	37088. 5.
Herd Maintenance Charge		744. 5.		2066. 1.		1363. 6.
Herd Maintenance Charge per Cow ...		19.		2. 4.		1. 7.
Herd Maintenance Charge per Calf Reared ..		1. 0.		2. 8.		1.10.

TABLE 11.

AVERAGE PRICES FOR REPLACEMENTS AND DISPOSALS

CROSS BRED HERDS

	1948/49	1949/50	1950/51
Replacements and Additions	£. s.	£. s.	£. s.
Cows Bought	43.15.	42. 4.	39.16.
Heifers transferred in	32. 0.	31. 0.	36.19.
Disposals			
Cows Sold	32. 3.	28. 2.	34. 5.
Cows transferred out.	30.11.	28. 5.	35. 0.

TABLE 12

HERD MAINTENANCE - GALLOWAY HERDS

	1948/49		1949/50		1950/51	
	No.	£. s.	No.	£. s.	No.	£. s.
Opening Valuation Cows	360	10940. 0.	376	11668. 0.	392	12418.12.
Cows Bought	15	764. 7.	22	926. 2.	25	843. 2.
Heifers transferred in	39	1342. 0.	31	1067.14.	51	1574.15.
Total	414	13046. 7.	429	13661.16.	468	14836. 9.
Cows Sold	19	423.15.	14	259.17.	21	418. 4.
Cows transferred out .	5	125. 0.	6	98. 0.	11	323.15.
Cows Died	14	3. 0.	17	5. 0.	27	-
Closing Valuation Cows	376	11668. 0.	392	12418.12.	409	12936. 8.
Total	414	12219.15.	429	12781. 9.	468	13678. 7.
Herd Maintenance Charge		826.12.		880. 7.		1158. 2.
Herd Maintenance Charge per Cow ...		2. 6.		2. 6.		2.18.
Herd Maintenance Charge per Calf Reared ..		2.19.		2.15.		3.13.

TABLE 13.

AVERAGE PRICES FOR REPLACEMENTS AND DISPOSALS

GALLOWAY HERDS

	1948/49	1949/50	1950/51
Replacements and Additions	£. s.	£. s.	£. s.
Cows Bought	50.19.	42. 2.	33.15.
Heifers Transferred in	34. 8.	34. 9.	30.18.
Disposals			
Cows Sold	22. 6.	18.11.	19.18.
Cows Transferred out	25. 0.	16. 6.	29. 8.

It is not difficult to appreciate why the Herd Maintenance charge should vary one year with another. The factors affecting this calculation are (a) the numbers of cows to be replaced in a given year, together with any expansion or decrease in the size of the herd, (b) the prices realised for cows sold and the prices paid for replacements, (c) the valuations placed on cows retained and cows transferred into or out of the herd, (d) the incidence of deaths.

These factors will have varying effect according to the circumstances of particular herds. Where a herd consists of young cows, the need for replacements is likely to be less and the herd replacement charge so much the lighter for the time being. Where several old cows have to be replaced, the difference between the outgoing values and the cost of the (younger) replacements will result in heavier replacement charges. Suckling herds are not constituted of "regular ages" in the same systematic way as are hill sheep flocks and the replacement needs can be expected to vary within fairly wide limits from year to year. Thus, if the turnover of cows in Cross-bred Herds in the years 1948/49 and 1949/50 is examined, it will be seen (a) that appreciable purchases of cows were made in both years at average prices of £43.15s. and £42. 4s. in the respective years. In 1949/50 however 80 cows were sold out, 13 were transferred out, and 27 died, an out-turn of 120 cows that year. In the previous year, the out-turn consisted of 26 cows sold, 13 transfers and 8 deaths. In addition to the heavy incidence of deaths in 1949/50, the margin between the average cost of purchased cows, and the average price received for cows sold was £14. 2s. The corresponding figure in 1948/49 (which applied to a smaller number of cows) was £11.12s. Hence the marked rise in 1949/50 in the Herd Maintenance cost per cow in herd. The final margins in that year were also reduced by the lower average returns for the calves.

The per head average buying and selling prices and transfer values set out in Tables 11 and 13 reflect the general market conditions as they affected replacements over the period of the investigation.

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PART II

COSTS OF REARING CATTLE FROM WEANING TO 1½ YEARS OR SALE

For discussion purposes, these cattle will be referred to as yearlings. Generally they are the calves costed in 1949/50 and carried over on the farms where they were then reared.

The sample consisted of 571 yearling cattle in 38 lots on 33 farms. The division by breeds is as follows:-

A. Aberdeen Angus Cross - 307 cattle in 12 lots.
B. Blue-Grey - 159 " " 12 "
C. Pure Galloway - 105 " " 14 "

The geographical distribution of the farms is:-

Wooler area 9 farms with 10 lots,
Hadrian's Wall area 11 " " 12 "
North Tyne Valley 13 " " 16 "

The costs relate to the period November 1st 1950 to October 31st 1951 or, for cattle sold, to the date of sale if earlier than October 31st 1951.

Of the 310 Aberdeen Angus Cross calves at the start of the year, 46 were bought or transferred in; of the 159 Blue Grey calves 7, and of the 108 Galloway calves, 2. Deaths amongst yearlings during the year were 3 Aberdeen Angus Cross and 3 Galloway. It was not practicable to exclude the additional calves from the costings.

Costs and returns are presented below per yearling beast reared.

TABLE 14. COSTS AND RETURNS PER YEARLING BEAST. (6-18 Months)

	A. CROSS A.A. Average on 307 cattle		B. BLUE GREY Average on 159 cattle		C. GALLOWAY Average on 105 cattle	
	£. s.	£. s.	£. s.	£. s.	£. s.	£. s.
* Cost of Calves to Rear		13.14.		10. 4.		11.18.
Total Return		40.13.		34. 3.		31. 4.
Gross Margin		26.19.		23.19.		19. 6.
Rearing Costs:						
Feeding - Bought	2.13.		17.		1. 5.	
Home-grown .	7. 4.		4.18.		4. 5.	
Grazing	1. 9.		1. 6.		1. 0.	
Labour	1.16.		1.15.		2. 1	
Miscellaneous	9.		9.		5.	
Overheads	14.	14. 5.	14.	9.19.	14.	9.10.
Margin		12.14.		14. 0.		9.16.
Add Hill Cattle Subsidy		13.		2.10.		2.14.
Net Margin (2 years)..		13. 7.		16.10.		12.10.

* For details see Table 15.

The costs at which home-bred calves are brought into this year's computation are the average costs of production determined by the 1949/50 costings. These are the calves dropped in that year and carried on for further rearing on the same farms. Table 15 shows how the cost of calves is reached.

Hill Cattle Subsidy for the breeding cows in 1950 and Calf Subsidy for the calves dropped in 1950, which were treated in that year as additions to Net Margin, are here dealt with as deductions from gross costs.

The cost of bought calves represents (a) the purchase price of any weaned calves bought at about the same time as the home-bred calves were weaned, and (b) any other calves reared on the farm during 1950 but not included in the output of the breeding cows costed in that year, such as calves brought on to the farm with their dams, or other calves set on to the breeding cows in addition to their own calves.

TABLE 15. COST OF CALVES TO REAR

	A. CROSS A.A. Average on 307 cattle		B. BLUE GREY Average on 159 cattle		C. GALLOWAY Average on 105 cattle	
	£. s.	£. s.	£. s.	£. s.	£. s.	£. s.
Weaned Calves b/f at cost of rearing ..		15. 0.		16.10.		19. 5
Less:						
Hill Cattle Subsidy in 1950	1. 5.		4. 1.		4.14	
Calf Subsidy in 1950	3. 6.	4.11.	3. 4.	7. 5.	3. 3.	7.17.
Net Cost of Weaned Calves		10. 9.		9. 5.		11. 8.
Calves bought		3.18.		1. 1.		11.
Less Calf Subsidy ..	13.	13.	2.	2.	1.	1.
Net Cost of Calves Bought		3. 5.		19.		10.
Total Cost of Calves to rear ..... (Carried to Table 14)		13.14.		10. 4.		11.18.

The cost of feeding, which is seen to have varied considerably between the three classes of yearlings (Table 14), is examined in more detail in Table 16.

The analysis again shows clearly how the farms raising Blue Grey and Galloway cattle rely much more heavily on hay than the more fertile farms raising the Angus cross cattle. The latter farms could provide a more varied and balanced diet of hay, straw, roots, green fodder and silage, and although this resulted in average feeding costs of about £4 more per beast, this extra cost was more than covered by the extra value of the stirks at approximately 18 months. Against this must be set the higher cost of rearing the Angus Cross calves. It is then seen that the Blue Grey calves out of Galloway cows yielded the highest margins at approximately 18 months.

TABLE 16. ANALYSIS OF FEEDING COST PER YEARLING 1950/51

	A. CROSS A.A. Average on 307 cattle		B. BLUE GREY Average on 159 cattle		C. GALLOWAY Average on 105 cattle	
Home Grown:	Cwt.	£. s.	Cwt.	£. s.	Cwt.	£. s.
Hay	15.2	3. 9.	18.0	4. 1.	17.2	3.17.
Straw	2.4	4.	0.7	1.	0.5	1.
Roots	13.9	1.10.	2.6	6.	1.2	3.
Green Crops	2.3	5.	2.6	5.	1.3	3.
Grass Silage	0.7	1.				
Total		5. 9.		4.13.		4. 4.
Cereals	3.1	1.15.	0.4	5.	0.1	1.
Total Home Grown		7. 4.		4.18.		4. 5.
Bought:						
Hay	1.0	15.	0.3	4.	1.0	17.
Roots					0.2	1.
Beet Pulp			0.4	4.	0.1	1.
Total		15.		8.		19.
Concentrates ...	1.4	1.18.	0.4	9.	0.2	6.
Total Bought ...		2.13.		17.		1. 5.
TOTAL FOODS		9.17.		5.15.		5.10.

This analysis does not settle the question of the relative merits of the various classes of cattle. The details given in Table 17 show that the returns per beast are strongly affected by the valuations placed upon the retained cattle. These valuations are seen to be higher than the prices realised for the cattle sold as stores in the case of the Angus Cross herds, and the same holds good for the Galloways breeding pure. The valuations of the retained Blue-Grey bullocks were slightly higher than the realised prices of bullocks sold, but the retained heifers were valued below the realised prices of heifers sold.

The general implication seems to be that, for the Cross Angus and Galloway herds (breeding pure) either the better cattle were being retained for finishing or markets for stores were not considered attractive enough. It has generally been the case that buyers of store cattle have preferred either the weaned calf or the two year-old, and have been less interested in stores around the age of 15-18 months. Further support for this can be got from the details of disposals given in Table 17. Amongst all herds the preference was clearly to carry over the yearlings. 60% of the yearlings beginning the costings year in the A.A. herds were still on the farms at the end of the year. Amongst the Galloway herds the proportion was even higher, 88%.

TABLE 17. RETURNS PER YEARLING BEAST

		A. CROSS A.A.		B. BLUE GREY		C. GALLOWAY	
		No.	Av. Price	No.	Av. Price	No.	Av. Price
			£. s.		£. s.		£. s.
SOLD FAT	Bullocks	3	50. 1.				
	Heifers	20	25.10.				
SOLD STORE	Bullocks	64	41.17.	25	34. 1.	10	21.13.
	Heifers	35	34.19.	38	35.10.	3	22.13.
RETAINED	Bullocks	131	44.19.	49	36. 3.	33	34.12.
	Heifers	54	37.10.	47	30.19	59	35. 1.
AVERAGE RETURN PER BEAST		307	40.13.	159	34. 3.	105	31. 4.

PART III

COSTS AND RETURNS OF REARING CATTLE FROM 1½ to 2½ YEARS OR SALE

These cattle will be referred to as 'two year olds'.

Results are presented for the rearing of 364 two year old cattle from 1st November 1950 to 31st October 1951 or to the date of sale if this was earlier. All but eight of these were cattle retained from the 1949/50 costed yearlings, the eight being cattle of about the same age bought for addition to one of the costed groups during November 1950.

28 separate lots were costed on 24 farms, i.e., 6 lots on 6 farms in the Wooler district, 7 lots on 6 farms along Hadrian's Wall and 15 lots on 12 farms about the North Tyne Valley. The results are analysed in three groups according to the breeds of the cattle.

Group A. Cross Aberdeen Angus, 186 cattle in 8 lots,
" B. Blue Grey 116 " " 11 "
" C. Galloway 52 " " 9 "

In the Galloway group 2 cattle died during the year, 50 cattle being reared.

Costs and Returns per Two Year Old Beast Reared are presented in the following table.

TABLE 18. COSTS AND RETURNS PER 2 YR. OLD BEAST REARED 1950/51

	A. CROSS A.A. Average on 186 Cattle	B. BLUE GREY Average on 116 Cattle	C. GALLOWAY Average on 50 Cattle
	£. s.	£. s.	£. s.
Cost of Yearling Cattle to rear	24. 8.	17. 5.	17.16.
Total Return - 2½ year old Cattle	61. 1.	48.12.	44. 5.
GROSS MARGIN	36.13.	31. 7.	26. 9.
Costs: Feeding - Bought ...	1.19.	9.	18.
Home-grown	7.19.	4.19.	3.12.
Grazing	2. 7.	2. 9.	1. 8.
Labour	1.19.	2. 4.	2. 4.
Miscellaneous	14.	1. 0.	5.
Overheads	16.	17.	16.
Rearing Cost this year	15.14.	11.18.	9. 3.
Margin	20.19.	19. 9.	17. 6.
Add Hill Cattle Subsidy ...	19.	2. 3.	2. 6.
Net Margin (3 years)	21.18.	21.12.	19.12.

First, the cost at which the yearling cattle are brought into the calculation is made up as shown in Table 19. The 1950 hill cattle subsidy, in that year shown as an addition to Net Margin, is here shown as a deduction from the gross costs of rearing.

TABLE 19. COST OF YEARLING STORE CATTLE AT START OF PERIOD

PER BEAST

	A. CROSS A.A.	B. BLUE GREY	C. GALLOWAY
	£. s.	£. s.	£. s.
1½ year old Cattle B/f at cost of rearing	23. 6.	19.19.-	20.15.
Less Hill Cattle Subsidy in 1950	17.	2.14.	2.19.
Net Cost of 1½ year old Cattle .	22. 9.	17. 5.	17.16.
1½ year old Cattle bought	1.19.	-	-
Total Cost of Cattle to rear to approx. 18 months (Carried to Table 18)	24. 8.	17. 5.	17.16.

TABLE 20. AVERAGE FEEDING COSTS PER BEAST. 3rd YEAR

	A. CROSS A.A. Average on 186 cattle		B. BLUE GREY Average on 116 cattle		C. GALLOWAY Average on 50 cattle	
	Cwt.	£. s.	Cwt.	£. s.	Cwt.	£. s.
Home Grown:						
Hay	9.6	2. 3.	20.2	4.11	14.6	3. 6.
Straw	14.8.	1. 6.	1.9	3.	3.4	6.
Roots	28.0	3. 1	2.3	5.	0.1	-
Kale	2.5	6.				
Grass Silage	0.9	2.				
Total		6.18.		4.19.		3.12.
Beans & Cereals ..	1.8	1. 1.				
Total Home Grown		7.19.		4.19.		3.12.
Bought:						
Hay	1.6	1. 3.	0.6	8.	0.4	7.
Straw			0.1	1.	0.2	2.
Roots					0.8	6.
Total		1. 3.		9.		15.
Concentrates	0.5	16.				3.
Total Bought		1.19.		9.		18.
Total Foods per Beast		9.18.		5. 8.		4.10.

As beasts were being marketed at various times during this year, the actual cost period varies for individual animals. The average cost figures therefore, do not refer to a full year's keep but to that part of the year up to the date of disposal. The following table shows the percentages of sales or transfers in each month. It is evident that most of the cattle did in fact remain on the farms until the autumn, and especially the Blue Greys and Galloways. Earlier finishing, as would be expected, was more evident amongst the Cross Angus cattle, of which a high proportion were disposed of through the grading centres.

Most of the Blue Grey cattle were sold as stores, while one half of the Galloway group were heifers transferred to the breeding herds.

TABLE 21

PERCENTAGE SALES AND TRANSFERS OF CATTLE BY MONTHS

Month	A. CROSS A.A.	B. BLUE GREY	C. GALLOWAY
	%	%	%
February .	6	-	-
March	2	7	-
April	14	-	-
May	5	-	12
June	-	3	-
July	-	1	-
August ...	3	-	-
September.	40	6	-
October ..	19	79	52
Retained .	11	4	36
	100	100	100

TABLE 22. DISPOSAL OF CATTLE (PERCENTAGES)

	A. CROSS A.A.	B. BLUE GREY	C. GALLOWAY
	%	%	%
Sold Fat	60	6	-
Sold Store	29	84	21
Heifers Transferred to Breeding Herds	-	6	40
Retained	11	4	35
Died	-	-	4
	100	100	100

TABLE 23. AVERAGE PRICES AND VALUES PER HEAD

		A. CROSS A.A.		B. BLUE GREY		C. GALLOWAY	
		No.	Av.Price	No.	Av.Price	No.	Av.Price
			£. s.		£. s.		£. s.
SOLD FAT	Bullocks	66	68. 1.	4	60. 0.	-	-
	Heifers	46	59. 4.	3	55. 0.	-	-
SOLD STORE	Bullocks	53	56.11.	51	53.12.	9	33.13.
	Heifers	-		46	44. 3.	2	33. 5.
TRANSFERRED TO BREEDING HERD	*Heifers	-		7	44. 0.	21	50. 0.
RETAINED	Bullocks	20	54.19.	1	40. 0.	9	38.18.
	Heifers	1	50. 0.	4	30. 0.	9	49. 7.
Average Return per Beast		186	61. 1.	116	48.12.	50	44. 5.

* The heifers transferred to the breeding herds were transferred at their actual cost of production but here their value has been taken as the estimated market value, to give a better indication of relative profitability.

TABLE 24.

COMPARISON OF MARGINS ON YEARLINGS AND TWO YEAR OLD CATTLE

		A. CROSS A.A.	B. BLUE GREY	C. GALLOWAY
		£. s.	£. s.	£. s.
	Value of Yearling	39.10.	31.15.	31. 3.
	Less Cost of Yearling	24. 8.	17. 5.	17.16.
(e)	Net Margin at approx.1½ yrs.	15. 2.	14.10.	13. 7.
	Value of 2½ year old Beast .	61. 1.	48.12.	44. 5.
	Less Value as Yearling	39.10.	31.15.	31. 3.
(a)	Gross Margin 1½-2½ years ...	21.11.	16.17.	13. 2.
(b)	Less Cost of Rearing from 1½ to 2½ years	15.14.	11.18.	9. 3.
(c)		5.17.	4.19.	3.19.
	Add Hill Cattle Subsidy	19.	2. 3.	2. 6.
(d)	Net Margin 1½-2½ years	6.16.	7. 2.	6. 5.

The facts given in the above table may be re-stated thus:-

The Gross Margins on the two year-old cattle (line a) are the values added to the cattle in the third stage of costing, i.e., from yearling to finishing. The costs (line b) are the costs incurred to get these increases in value, so that the differences (line c) are the Net Margins earned in carrying the cattle from yearling ages to finishing ages. To these Net Margins must be added the Hill Cattle Subsidy received by the farms eligible, and averaged over the groups. As was noted at the bottom of page 20, the finishing stage was not a full year in all cases.

The Net Margins at line (e) are those earned in raising the cattle to approximately 18 months. Margins (d) and (e) together make up the profit per head over the beasts' whole (costed) life.

In considering the relative margins for yearlings and Two Year Old Cattle, it should be noted that the costs charged against the yearlings were incurred at the cost levels experienced in 1949/50 and 1948/49. Throughout the period of this investigation costs have been advancing at higher rates than returns and the implication is that the advancement in the prices paid for fat cattle have been fairly quickly transferred back to cattle rearers.

More generally, reviewing the results as a whole, it might seem that selling at the weaned calf stage has advantages over the carrying on to later ages, but the problem is not so simple as this. For farms capable of finishing cattle, and therefore requiring supplies of stores to feed, it will be a matter of nice judgment and trading ability to decide how large a breeding herd to carry, and how many calves to sell or carry over. Selling off the calves may leave room for keeping more breeding cows but this advantage may well be neutralized by having to buy older stores from other rearers for finishing, according to the ways in which cattle are fitted into the general economy of the farms concerned.

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