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Calves

Cost of production O.S.

**NORTH OF SCOTLAND COLLEGE OF AGRICULTURE
and NATIONAL FARMERS' UNION OF SCOTLAND**

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Report on a Weaned Calf Wintering Scheme

by

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National Farmers' Union of Scotland*

and

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NORTH OF SCOTLAND COLLEGE OF AGRICULTURE

AGRICULTURAL ECONOMICS DIVISION

and

NATIONAL FARMERS' UNION OF SCOTLAND

MORAY AND NAIRN AREA

REPORT ON A WEANED CALF WINTERING SCHEME

by

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National Farmers' Union of Scotland

and

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FOREWORD

In the autumn of 1965 and of 1966, very marked price fluctuations were recorded at weaned calf sales held in the Moray Area of the National Farmers' Union of Scotland. Because of the uncertainty surrounding these sales an investigation was undertaken during the winter of 1967/68 to try to discover whether it was feasible for calves to be taken from upland farms to lowground farms to be fattened on a co-operative basis. It was not intended to evolve a complicated Scheme, but rather to search for the simplest possible method of utilising profitably, for both upland and low-ground farmers, cattle courts which were at that point lying empty. Examination showed, however, that there were no real figures available regarding the true cost of feeding under the particular system which was envisaged. When the proposition was put forward to farmers in the Area, a number of members mainly from the upland districts agreed to support the Scheme on a trial basis, but, in order to spread any possible risk of loss, it was suggested that only a few calves should be accepted initially from each farm.

The active participation of local farmers avoided any danger of the project becoming simply an academic exercise, and the whole agricultural community took a keen interest in the outcome. At the conclusion of the Scheme it was obvious that a true assessment of its value would be difficult, owing to the large increase in the price of cattle which had taken place during the 1967/68 winter. Nevertheless, the relationship between costs and returns was of considerable significance both to farmers taking part and to others in the Area.

For the moment, it would appear that, under the present subsidy system and under the present method of feeding calves, such a Scheme is not financially attractive from the rearers' point of view. This, however, is not a condemnation of the Scheme itself, but merely points to the current lack of profitability which runs throughout the whole of the beef industry. If for no other reason, the Scheme has proved worthwhile in bringing to light some of the difficulties facing both rearers and fatteners regarding the profitability of beef production.

George S. Hay
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WEANED CALF WINTERING SCHEME, MORAY

Introduction

The market for weaned calves has for many years had an important effect on the profitability of upland farms in the North of Scotland. Situated in areas where few alternatives to extensive livestock production exist, upland rearing farms provide a reservoir of young store cattle to be fattened on low-ground units. While the demand for finished beef is generally strong and likely to increase, demand at the intermediate store stage is less predictable, being influenced by factors such as the availability of winter fodder and Government price support policy. In addition, the weather plays a most important part in determining forage production on upland farms, affecting the nutrition of the hill cow and the subsequent performance of her calf. Livestock breeders are therefore confronted with a store market situation where prices can fluctuate appreciably from year to year.

Few upland farmers are in a position to develop fully integrated rearing and feeding systems which might allow them to by-pass the store market, since in most cases weaned calves can only be overwintered at the expense of breeding stock. The present Hill Cow and Calf Subsidy payments operate in such a way that upland farmers are given positive encouragement to maintain the maximum number of breeding cows on their property, and subsidy income is a significant part of gross cattle output on such farms. To overwinter stores would therefore require scarce winter feed, which could more appropriately be devoted to maintaining the cow herd.

These points were brought out in a comprehensive report by L. V. McEwan, "The Marketing of Store Livestock in Scotland", commissioned from the University of Glasgow, and published by the National Farmers' Union of Scotland in 1965. This report emphasised the problem of handling small batches of calves from individual farms located at some distance from the main markets, and drew attention to imperfections in the marketing process which can result in variations of price for similar classes of store stock between years, months, and even points in time on the day of the sale.

Such difficulties are strong arguments in favour of producer grouping, to strengthen the bargaining position of small-scale calf rearers supplying

a relatively limited number of calf feeders. In the long term, groups of this sort might reach a stage where calves could be sold direct to feeders at agreed or 'recommended' prices, in the same way as weaner pigs (and some barley-beef calves) are handled at present.

The Scheme

As a consequence of McEwan's report, discussions on the marketing of store cattle were held by various Scottish N.F.U. Area Executive Committees. In the Moray and Nairn Area, where upland farmers in Speyside had experienced a particularly poor trade for smaller calves in the autumn of 1966, it was felt that advantages could be gained by overwintering these calves, and selling them together in the spring. At the same time, some low-ground farmers, having increased their cereal acreage and simplified their farming systems, found themselves with unused cattle courts. Accommodation was therefore available at no capital cost, within a relatively short distance of the upland farms, while labour could also be supplied fairly readily by the low-ground units over the winter period.

Accordingly, the Moray and Nairn Area N.F.U. instituted a scheme to bring together the two parties, and in the spring of 1967 a small committee produced a number of ideas on how the interests of those concerned could be merged to mutual advantage. It was agreed that a trial scheme should be conducted during the winter of 1967/68, with a number of interested rearers submitting calves to be overwintered in vacant courts on one low-ground farm. Ownership of the calves would remain in the hands of the breeders, who would pay an agreed weekly charge estimated in advance to cover the cost of feed, labour and tractor hours, together with a small contribution towards general overheads and supervision. Having achieved a preliminary grouping of the calves in this way, it was considered desirable to sell all the animals at a spring sale in Elgin, although owners would be at liberty to dispose of their stock as they thought fit.

In the first instance, two situations were envisaged:-

- Case 1: The overwintering of small calves with an average liveweight of, say, $3\frac{1}{2}$ cwt, and
- Case 2: the overwintering of heavier animals with an average liveweight of perhaps 5 cwt per head at entry.

In estimating possible results, it was assumed that the stock would be court-housed from mid October to mid April - a feeding period of 180 days.

While liveweights were bound to vary somewhat, animals intended for the scheme would require to come within specified limits of acceptability, to give reasonable uniformity. All calves would therefore be weighed before entering the courts, and would be assessed visually to ensure as far as possible a proper standard of health.

Initially, the ration was expected to consist of silage, draff and barley, together with any necessary mineral supplement. Straw would be made available for bedding, but its cost would not be included in the wintering charge, being offset by the value of the dung produced.

The appropriate total winter feed requirements per head were then calculated as follows:-

<u>Case 1</u>	<u>Feed</u>	<u>Requirements per head</u>	<u>Budgeted cost/ton</u>	<u>Total Cost</u>
	Silage	48.21 cwt	£2: -: -	£4: 16: 6
	Draff	15.00 cwt	£2: 10: -	1: 17: 6
	Barley	3.21 cwt	£20: -: -	3: 4: 3
				<u>£9: 18: 3</u>
<u>Case 2</u>				
	Silage	72.33 cwt	£2: -: -	7: 4: 9
	Draff	21.43 cwt	£2: 10: -	2: 13: 6
	Barley	3.21 cwt	£20: -: -	3: 4: 3
				<u>£13: 2: 6</u>

It was recognised that other costs would be incurred, and preliminary estimates for the use of labour and machinery, housing, and veterinary services were included. Labour and machinery costs per head, covering the transport of feed to the cattle and the feeding operation itself, would depend on the numbers of cattle actually housed, and at this stage it was assumed that as many as 190 cattle might be overwintered. On the basis that this number would occupy one man for a substantial portion of the time, and that relief work would be required at weekends, a sum of £400 was allowed for labour together with £50 for tractor running costs. This gave a labour and machinery cost of £2: 7: 6 per head.

The cost of housing was difficult to estimate with any degree of accuracy, since the courts were part of a steading built on traditional lines many

years ago. They were nevertheless soundly constructed and adequately maintained. The capital cost of new buildings to serve the same purpose might be in the vicinity of £30 per head, which would amount to £3 per head per annum depreciated over 10 years. This is equivalent to a charge of slightly over 2s. per head per week for the feeding period. In the present case, since no readily available alternative use existed for the building, it was considered reasonable, as part of the costing exercise, to make a nominal charge of 1s. per head per week to cover maintenance and repairs, and this was rounded up to 30s. per head for the winter six months to account for electricity.

To allow for possible veterinary charges, and to supply minerals, an arbitrary sum of 10s. per head was included. The cost of labour, housing, and veterinary services was assumed to be the same for both classes of stock, although it could be argued that the larger animals should bear a higher proportion of these ancillary costs.

The preliminary estimate of costs per head was therefore:

	<u>Case 1</u>	<u>Case 2</u>
Food	£9: 18: 3	£13: 2: 6
Labour etc.	2: 7: 6	2: 7: 6
Vet. etc.	10: -	10: -
Housing	1: 10: -	1: 10: -
	<u>14: 5: 9</u>	<u>17: 10: -</u>

The margin available to the calf rearers would depend on the state of the store market in the spring. The price differential between an over-wintered calf sold in April and the likely value of the same animal at October is not easy to forecast, but in the first budget the following assumptions were made:

	<u>Case 1</u>	<u>Case 2</u>
Target liveweight gain per head per day	1 lb	1.25 lb
Winter liveweight gain per head	180 lb	225 lb
Liveweight at October '67	400 lb	560 lb
Liveweight at April '68	580 lb	785 lb
Estimated April '68 valuation	£50: -: -	£70: -: -
Estimated October '67 valuation	30: -: -	45: -: -
Value added per head	<u>20: -: -</u>	<u>25: -: -</u>
Less Wintering Cost	14: 5: 9	17: 10: -
Owner's margin per head	<u>5: 14: 3</u>	<u>7: 10: -</u>

At the level of costs and returns assumed, there was therefore some encouragement to go ahead with a trial scheme for the 1967/68 winter. Further meetings took place during which the proposals were discussed, and at a meeting held by the N.F.U. in Grantown on 12th September 1967, a number of producers agreed to make calves available on a trial basis for overwintering in 1967/68. A sub-committee including the local College adviser was set up to decide the rations to be fed, and the main conditions of the scheme were discussed. By the end of September, agreement had been reached on the following points, which were set out in a paper prepared and circulated by the Moray and Nairn Area N.F.U.

Livestock

- 1) Ownership to remain with the breeder.
- 2) Only stot calves to be entered.
- 3) Weight to be between $3\frac{1}{2}$ and 4 cwt (limits to be strictly adhered to).
- 4) Of good health and capable of steady growth.
- 5) Calves to be weighed by the North of Scotland College of Agriculture, before leaving the farm.
- 6) All animals to be clearly ear-marked.

Feeding

- 7) Calves to be fed the ration as recommended by the Sub-Committee.
- 8) Target liveweight gain of $1\frac{1}{4}$ lb per animal per day.
- 9) Estimated cost of feed, labour, etc. as per attached paper.
- 10) Animals to be housed at a specified low-ground farm, under the supervision of the farmer.
- 11) Straw to be supplied free of cost.
- 12) Dung to be retained by the low-ground farmer.
- 13) Estimated over-wintering cost of 17s. per animal per week.

General Conditions

- 14) Duration of Scheme from 17th October, 1967 to 20th April, 1968.
- 15) Calves will be weighed on the farm on 12th and 13th October.
- 16) Detailed costings to be carried out by North of Scotland College of Agriculture.
- 17) For record purposes calves to be valued at farm at Weekly Standard Prices.
- 18) Payments for keep to be made in two instalments - at mid-way and completion of trial.
- 19) Owners to be afforded facilities to see the calves at least at the end of November, middle and termination of Scheme.
- 20) The Committee appointed to supervise feeding to have right of rejection at the low-ground farm if calves in the opinion of the Committee are not up to standard.
- 21) Regular inspection by Veterinary Surgeon.
- 22) During trial Scheme an entry fee of £2 per animal to cover administrative costs, Veterinary Surgeon's fees and also to form the basis of a group sharing Scheme in the event of death of calves. The £2 entry fee to include all Veterinary Surgeon's fees from the Commencement of the Scheme.

One of the main objectives of the Scheme was to try to determine true wintering costs, and the proposed charge of 17s. per head per week was regarded as an estimate subject to review at the conclusion of the Scheme, when it was intended to make the figures generally available. An attached paper gave revised estimates of the rations to be fed and the costs allowed. These rations represented quantities to be fed at the middle of the winter period.

	<u>Rations</u> <u>per day</u>	<u>Est. cost</u> <u>per ton</u>	<u>Est. cost</u> <u>per week</u>
Silage	25 lb	£3: -: -	4s. 8 ¹ / ₂ d.
Draff	5 lb	2: 15: -	-s. 8 ¹ / ₂ d.
Hay	2 lb	12: -: -	1s. 6d.
Barley (bruised)	2 lb	22: -: -	2s. 9d.
Beet Pulp	1 lb	21: -: -	1s. 4d.
Total weekly food cost			11s. -d.
Labour			2s. 4d.
Tractor			-s. 8d.
Supervision, electric light, etc.			2s. -d.
			<u>16s. -d.</u>

These figures were based on an expected intake of 60 calves. The 2s. charge for supervision, electric light, etc., was calculated by taking 15 per cent of the feed, labour and tractor costs to represent a reasonable return to the owner of the courts. To safeguard against possible contingencies, a further 1s. per head per week was included, bringing the agreed weekly charge during the experimental period up to 17s.

Results

At the commencement of the Scheme on 17th October 1967, 32 calves became available, from a dozen farms. Over 60 calves had been put forward by various owners, but about half of these calves were found to be of greater liveweight than anticipated. The animals were weighed at the farms on 12-13th October, and the average liveweight of the group accepted was 3 cwt 3 qr 9 lb (429 lb). Seven animals were slightly over the intended maximum of 4 cwt, although the limit was not exceeded by more than 14 lb. One animal was 7 lb under the minimum weight stipulated, but it was felt that these discrepancies were not sufficient to disqualify the calves. Details of the individual liveweights are given in Appendix Table 1.

Since food would account for the largest share of the cost of the project, it was necessary to exercise careful control over the rations to

be fed. The method adopted was that suggested by A. B. K. Tracey⁽¹⁾, where the stockman was given a note from the farmer instructing him to feed specific quantities of the various foodstuffs. These instructions were changed periodically to allow for greater intake as liveweight increased, but the aim was to ensure that, as far as possible, total feed consumption remained close to the budgeted figures. At approximately monthly intervals, a summary of the quantities fed was prepared. Current market prices were used for home-grown cereals and hay, and silage was charged throughout the winter at a flat rate of £3 per ton.

Foot and Mouth precautions disrupted plans to check-weigh the calves at the half-way stage, but the cattle were re-weighed on 14th February 1968, when a mean liveweight of 5 cwt 15 lb (575 lb) was recorded. The average rate of liveweight gain up to this point was therefore 1.17 lb per head per day.

At the final weighing on 17th April 1968, the average liveweight had increased to 5 cwt 2 qr 20 lb (636 lb). This gave an average weight gain of 207 lb per calf or approximately 1.1 lb per head per day over a period of roughly 27 weeks. Details of the intermediate and final weights of the individual animals are also shown in Appendix Table 1.

The records of feed used during the winter were collated and analysed to give total quantities consumed during the period. These figures are set out in the Feed Utilisation Summary Table.

(1) Tracey, A. B. K. (1967). Winter Feed Control for Cattle and Sheep. Scottish Agriculture XLVI. No. 4. Autumn 1967.

FEED UTILISATION SUMMARY WINTER 1967/68

(32 stores - 185 day feeding period)

	Minerals	Draff	Beet Pulp	Barley	Oats	Silage	Hay	Straw	Total*
Total Quantity fed	2 Blocks	913 bushels	46 cwt 64 lb	70 cwt 20 lb	70 cwt 104 lb	76 tons 17½ cwt	5 tons 11½ cwt	16 tons 4 cwt	-
Cost per unit	22s. 6d. each	11½d./bushel	20s. 7½d./cwt	22s./cwt	20s./cwt	£3/ton	£14-£16/ton	£4-£7/ton	-
Total cost	£2: 5: -	£43:15: -	£48: -: 6	£77: 3:11	£70:18: 7	£230:12: 5	£84: 6: 6		£557: 1:11
Total Quantity used per head	-	14.26 cwt	1.46 cwt	2.19 cwt	2.21 cwt	48 cwt	3.48 cwt	10.1 cwt	-
Total Cost per head	1s. 5d.	£1: 7: 4	£1:10: -	£2: 8: 3	£2: 4: 4	£7: 4: 2	£2:12: 9	£3: 6: 6	£17: 8: 3
Actual Quantity used per head per day	-	8.5 lb	0.9 lb	1.3 lb	1.3 lb	29.1 lb	2.1 lb	6.1 lb	-
Budgeted " " " " " "	-	5.0 lb	1.0 lb	2.0 lb	-	25.0 lb	2.0 lb	Not estimated	-
Actual cost per head per week	½d.	1s.	1s. 1½d.	1s. 10d.	1s. 8d.	5s. 5½d.	2s.	2s. 6d.	13s. 1½d.
Budgeted " " " " " "	-	8½d.	1s. 4d.	2s. 9d.	-	4s. 8½d.	1s. 6d.	Not estimated	11s.

*Total does not include the value of straw used, since straw was supplied free of cost, the dung being retained by the owner of the courts.

The cost of straw was not debited to the calves, but the quantity used and the approximate cost is shown in the table to complete the record.

Expenditure on minerals was low at $\frac{1}{2}$ d. per head per week, but the animals did not appear to suffer from any deficiencies. Since the farm is close to the sea, conserved fodder could be expected to have a high salt content, and trace elements are not generally a critical factor in the nutrition of this class of stock. Draff was purchased by volume from a local distillery, at a cost of $11\frac{1}{2}$ d. per bushel. Assuming a bushel weight of 56 lb, the quantity fed was approximately 8.5 lb per head per day, or 3.5 lb per head per day in excess of the budgeted figure. The anticipated cost was exceeded by about $3\frac{1}{2}$ d. per head per week. Beet pulp was fed at a slightly lower rate than forecast, and the cost per head per week was $2\frac{1}{2}$ d. less.

Instead of straight barley, it was agreed that a 50:50 mixture of bruised oats and bruised barley could be used. This was fed at an average rate of 2.6 lb per head per day, which was 0.6 lb per day in excess of the budgeted figure for cereals, and cost an extra 9d. per head per week. Silage also was fed above the budgeted amount, resulting in a cost increase of 9d. per head per week. Hay was fed at an average of 2.1 lb per head per day, instead of the 2.0 lb envisaged, but because of the higher market value of hay in the 1967/68 winter, an additional cost of 6d. per head per week was incurred.

Owing to the combination of extra feed used and variations in the cost of some constituents, the budgeted cost of feed was exceeded by 2s. $1\frac{1}{2}$ d. per week - (2s. 1d. excluding minerals). The value of straw used, which was not taken into account, amounted to 2s. 6d. per head per week.

In spite of the additional feed consumed, the performance of the calves did not reach the anticipated level, although the environment of traditional strawed courts should not have had an adverse influence on average growth rate. It may be that some of the calves were of inherently low potential, or that the feeding value of some of the constituents of the ration was below average.

Labour for the routine jobs of carting feed, and bedding and feeding the stock was recorded, and the average time devoted to these tasks was estimated to be 11 hr. 55 min. per week. To take into account holidays, perquisites, and the cost of relief labour, it was estimated that a charge of 8s. per hour would be appropriate for man labour. On this basis, the total labour cost amounted to £3:19s. per head, or almost 3s. per head per week.

Tractor time was estimated to average 4 hr. 55 min. per week, or 130.3 hours for the winter period. At a charge of 4s. 9d. per tractor hour (the standard rate to cover fuel, depreciation and repairs) this was equivalent to 19s. 4d. per head or 9d. per head per week.

The weekly cost per head was therefore estimated to be:

	<u>Actual</u>	<u>Budgeted</u>
Food (including minerals)	13s. 1½d.	11s. -d.
Labour	3s. -d.	2s. 4d.
Tractor	9d.	8d.
	<u>16s. 10½d.</u>	<u>14s. -d.</u>

No charge has been included in the actual costs to cover repair and maintenance of the cattle courts, electricity, building insurance, and general supervision. If 1s. per head per week is added for the use of the buildings, the wintering cost then amounts to 17s. 10½d. per head per week, or roughly £23:13: 6 for the winter.

Discussion

In order to evaluate the merits or otherwise of the Scheme, it was necessary to assess the approximate value of the calves at entry, and to find a reasonable basis for valuing the same animals in the spring. The need for this was apparent since the exceptionally firm trade for store cattle in the spring of 1968 could give an over-optimistic picture of returns if actual sale prices were used. Coupled with this, Press and T.V. publicity had stimulated interest in the Scheme, and the dispersal sale at Elgin on 20th April was well attended. All owners agreed to submit their animals for sale at this point, and the stores were grouped in small lots according to weight and condition by an independent assessor. Prices were therefore likely to have been improved by the circumstances surrounding the sale.

To discount the effect of these factors, some of which were incidental to the Scheme, animals were valued according to the Weekly Standard Price in force at the times of weighing in October (Week 29, 1967) and April (Week 3, 1968). The prices per live cwt were 174s. 6d. and 209s. 6d. for these periods respectively. By this method (Method A), the average ingoing valuation was £34:11: 7, while the value at mid-April, 1968 was £59: 9:10, giving a margin of £24:18: 3 due to wintering. This margin is estimated without having taken sales charges into account. Sales commission and insurance might amount to about one guinea for animals in this price range, and when this is deducted together with wintering charges, the average return to the owner is very slim indeed.

METHOD A

	<u>Per Head</u>	<u>Per Head</u>
Av. Valn. at Weekly Std. Price, April 1968		£59: 9:10
Av. Valn. at Weekly Std. Price, October 1967		<u>34:11: 7</u>
Notional margin		24:18: 3
Less estimated commission and insurance	1: 1: -	
Less estimated wintering costs	<u>23:13:6</u>	<u>24:14: 6</u>
Average margin available to owner		<u>3: 9</u>

In fact, the prices realised at the April sale were generally somewhat better than the figure derived from Weekly Standard Prices would suggest. The average gross market price was £64:13: 3, which, less commission and insurance of £1: 2: 1 per head, gave a net average realisation of £63:11: 3 per head. Taking the estimated average value of £34:11: 7 at ingo, the average return to the owner (Method B) was £5: 6: 1 per head over the 1967/68 winter period, when feed costs etc. were deducted.

METHOD B

	<u>Per Head</u>	<u>Per Head</u>
Actual average market price, April 1968		£64:13: 3
Av. Valn. at Weekly Std. Price, October 1967		<u>34:11: 7</u>
Estimated margin		30: 1: 8
Less commission and insurance	1: 2: 1	
Less estimated wintering costs	<u>23:13: 6</u>	<u>24:15: 7</u>
Average margin available to owner		<u>5: 6: 1</u>

The figures for the group as a whole are summarised in Appendix Table 2, together with average figures for the three best and three worst calf performances. The relationship between total liveweight gain and

initial liveweight, and the distribution of owner's margins (Method B) are shown in Appendix Tables 3 and 4 respectively. The three best calves were selected from the top group of six, and were those with the highest total liveweight gain over the winter period. The three worst calves made up the 'tail-end' group which fetched the lowest prices at the sale. Two of these calves entered the Scheme at the minimum liveweight of 3.5 cwt, but the third was only 14 lb short of 4 cwt at entry.

Valuing the calves at Weekly Standard Prices (Method A) the best calves left a margin of £6: 9s. over the estimated wintering cost of £23:13: 6, whereas wintering the calves in the worst group resulted in a deficit of £6: 6: 7. Using Method B, when the actual sale price is taken, the best calves left a margin of £14: 5s., compared to a deficit of £5:13: 7 in the case of the worst group (Appendix Table 2).

The Weekly Standard Price formula therefore provided a good indication of the market value of the worst calves at April 1968, although the best calves in the group comfortably exceeded this estimate of their worth.

Liveweight gains per head per day for the best group of calves were almost exactly double those of the poorest calves, resulting in an estimated food cost of 1s. 3½d. per lb liveweight gain for the three best, and 2s. 6d. per lb liveweight gain for the three worst animals. The average food cost per lb liveweight gain for the group as a whole was 1s. 8d. At the close of the Scheme, it emerged that one of the 'worst calves' had been affected by pneumonia before entry, while the two others were bred from bulls of doubtful performance.

Even where the very favourable circumstances of the spring sale are taken into account, the average margin available to the owner is not particularly attractive. The sum, of a little over £5 per head in the present Scheme, must compensate him for the risk which he has taken by retaining ownership of the calves for an extra six months. As part of the Scheme, all owners made an initial payment of £2 per head, partly to act as an insurance fund in the event of possible deaths, and partly to cover veterinary costs. Since no deaths occurred, a rebate of 30s. was available, but, had more than two calves died, this would have disappeared, and full compensation could not have been paid for animals lost.

In addition, it must be remembered that the owner of the calf has sacrificed the opportunity of selling his animal in October, and has therefore to carry the burden of financing the stock over the winter period. Had the calf been sold in the autumn, the cash released could have been used to reduce an overdraft or to finance some other project. In these circumstances, it is legitimate to make an interest charge in respect of the capital tied up in the overwintered calf.

October Value of calf (say)	£35
Initial levy	2
Capital involvement	£ <u>37</u>

Interest on this capital at 8 per cent for six months would amount to £1: 9: 6, and so the owner's average margin (Method A) of 3s. 9d. is wiped out, while the average margin (Method B) of £5: 6: 1 is reduced to £3: 16: 7 per head. Payment of the first instalment towards wintering costs must also be taken into account, since this occurs at the half-way stage before any return is generated. This payment may well increase an existing overdraft, and would further penalise the calf owner.

Conclusions

The advantages of a Scheme of this sort can be summarised as follows:

- A) The upland farmer is able to retain ownership of calves which may not find a ready market in the autumn, in the expectation of a firmer demand in the spring. Since the animals are overwintered on contract, the upland farmer is able to make the best use of his scarce winter keep by maintaining the maximum number of breeding cows. Payment towards wintering costs is met by two instalments, one at about the half-way point and the second on completion of the feeding period. There is thus an element of credit provided by the low-ground farmer, who supplies feed, etc., and is not fully recompensed until the spring, when the calf is sold. Finally, there is the possibility of realising a substantial price benefit by the sale of evenly matched groups of calves out of the courts in April.
- B) The low-ground farmer, perhaps for rotational reasons, may wish to grow grass or fodder crops, which he can cash only through livestock. By accepting calves to be reared on contract, he avoids capital outlay, at the same time eliminating the risk of price fluctuations in the store market.

He is therefore assured of a predictable income from cattle during the winter. An outlet for some feeding barley is also provided. In addition, productive work is available for the farm staff during the slack winter period. Dung produced by the stock remains on the low-ground farm, and the existing buildings may earn a return to cover their maintenance costs.

Although there are clear advantages to each of the parties concerned, in circumstances where the calves leave a margin sufficient to meet wintering costs and to provide an enhanced return, it is evident from the Moray Scheme that estimated wintering costs must be weighed carefully against the extra revenue derived from overwintering. Because of the partly fortuitous high prices at the April sale, only three calves - the three worst - failed to show a return sufficient to cover the imputed wintering costs. If Weekly Standard Price values are used, then ten animals leave a margin of less than £23:13: 6, and their owners could have been out of pocket.

Breeders therefore risk financial loss by submitting animals which are 'poor doers' or which, by reason of their small size, are liable to be bullied and deprived of feed in a system of group housing. While the Scheme has shown that a workable arrangement can be reached between the interests concerned, it has not solved the problem of the late or unthrifty calf, and in the long term, measures to advance the date of calving or to improve the quality of the stock on the hill appear to offer the best solution.

APPENDIX TABLE 1

Individual Liveweights of Animals (lb)

Calf No.	Weight at 13.10.67	Weight at 14.3.68	Weight Gain 13.10.67 to 14.2.68 (125 days)	Weight at 17.4.68	Weight Gain 14.2.68 to 17.4.68 (63 days)	Total Weight Gain (188 days)
1	448	609	161	672	63	224
2	406	546	140	616	70	210
3	434	581	147	637	56	203
4	441	574	133	665	91	224
5	406	616	210	679	63	273
6	434	553	119	609	56	175
7	462	616	154	679	63	217
8	406	560	154	637	77	231
9	441	602	161	658	56	217
10	406	504	98	560	56	154
11	385	525	140	588	63	203
12	413	539	126	616	77	203
13	420	560	140	630	70	210
14	427	532	105	588	56	161
15	399	546	147	637	91	238
16	455	602	147	658	56	203
17	448	630	182	672	42	224
18	420	560	140	623	63	203
19	462	630	168	714	84	252
20	448	588	140	623	35	175
21	434	518	84	567	49	133
22	413	567	154	588	21	175
23	392	490	98	504	14	112
24	420	574	154	644	70	224
25	434	616	182	679	63	245
26	448	658	210	714	56	266
27	462	665	203	707	42	245
28	392	525	133	574	49	182
29	455	651	196	735	84	280
30	392	518	126	560	42	168
31	462	574	112	658	84	196
32	455	588	133	665	77	210
Average	429	575	147	636	61	207
Av. Daily Gain Per Head	-	-	1.17	-	0.96	1.10

APPENDIX TABLE 2

Average Results per Head - 1967/68 Winter

	Best 3 calves	Average	Worst 3 calves
METHOD A			
Closing Valuation at Weekly Standard Price	66: 6: 9	59: 9:10	50:16:11
Opening Valuation at Weekly Standard Price	35: 1: 3	34:11: 7	32:12: 6
Notional value added	31: 5: 6	24:18: 3	18: 4: 5
Less estimated commission, insurance	1: 3: -	1: 1: -	17: 6
Less estimated wintering cost	23:13: 6	23:13: 6	23:13: 6
Owner's Margin	6: 9: -	3: 9	-6: 6: 7
METHOD B			
Actual market price	74: 5: -	64:13: 3	51:10: -
Opening Valuation at Weekly Standard Price	35: 1: 3	34:11: 7	32:12: 6
Estimated value added	39: 3: 9	30: 1: 8	18:17: 6
Less commission, insurance	1: 5: 3	1: 2: 1	17: 7
Less estimated wintering cost	23:13: 6	23:13: 6	23:13: 6
Owner's Margin	14: 5: -	5: 6: 1	-5:13: 7
Liveweight at sale	709 lb	636 lb	544 lb
Liveweight at entry to Scheme	436 lb	429 lb	406 lb
Total liveweight gain	273 lb	207 lb	138 lb
Liveweight gain per head per day	1.48 lb	1.10 lb	0.75 lb
Food cost per lb liveweight gain	1s. 3½d.	1s. 8d.	2s. 6d.

APPENDIX TABLE 3

Relationship Between Total Liveweight Gain and Initial Liveweight

Total l.w. gain 13.10.67 to 17.4.68 (188 days)	Initial Liveweight 13.10.67				Total
	Less than 400 lb	400 lb to 424 lb	425 lb to 449 lb	450 lb and over	
Less than 175 lb	2	1	2	-	5
175 lb to 224 lb	2	6	7	4	19
225 lb and over	1	2	2	3	8
Total	5	9	11	7	32

APPENDIX TABLE 4

Distribution of Sample According to Owner's Margin per Head
Over Winter Feeding Period

Owner's Margin per head*	No. of animals
£15: - - - £19:19:11	3
20: - - - 24:19:11	1
25: - - - 29:19:11	17
30: - - - 34:19:11	5
35: - - - 39:19:11	5
40: - - - 44:19:11	1
Total	32

*Net market realisation less October 1967 valuation
on Weekly Standard Price basis.