UNIVERSITY OF BRISTOL

DEPARTMENT OF ECONOMICS
(Agricultural Economics)

Selected Papers in Agricultural Economics

Vol. V. *No. 4.*

Some Economic Aspects of the Sheep Industry in the West of England

Report No. 3

Arable Sheep in Lowland Mixed Farming Areas of Somerset and Herefordshire, 1954-5

by

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Price 5s. 0d.

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March, 1958

Introduction

SINCE 1947 the number of sheep maintained on farms in England and Wales has shown a steady increase year by year, although total numbers in 1957 were still 11 per cent below the 1939 level: for Wales alone total sheep numbers were nearly 2 per cent higher in 1957 than in 1939, but for England they were nearly 16 per cent lower. Between different areas of the country however the recovery in sheep stocks has been very uneven. Taking the five West of England counties included in the Bristol I Province (Worcester, Hereford, Gloucester, Wiltshire and Somerset) total sheep were 13 per cent lower in 1957 than in 1939, but when the counties are considered separately, the range is from 14 per cent above the pre-war level in Hereford to 59 per cent below in Wiltshire.

This steady expansion in sheep numbers in the country as a whole was not interrupted in any way by de-rationing of meat and decontrol of fatstock marketing which occurred during the summer of 1954, although these developments certainly confronted fat sheep and cattle producers with radically altered economic circumstances. In fact, following decontrol the fatstock and meat markets were thrown into a state of considerable confusion. Some such confusion was inevitable following a long period of control, but the position was exacerbated by a number of factors, the chief of which was probably the fact that the type of fat animal which had been encouraged by the Ministry of Food price schedules was completely out-of-line with consumer's preferences revealed by the free market, preferences that also showed considerable changes compared with pre-war. A further complication was the erratic arrival of meat supplies from abroad and, due to a measure of equalisation of prices by butchers, movements of price levels bore little relationship to the supply position. There was in fact, following de-control, a "honeymoon" period between butcher and fatstock producer in which the price of fatstock, especially fat cattle, was bid up to a quite uneconomic level during the winter of 1954–5, the losses incurred by butchers on home-produced beef being offset by increases in the retail price of pork and imported beef and mutton. The artificially high price level for home-produced beef misled summer graziers into the belief that beef prices,

following decontrol, had been established at a much higher level, and bidding for store cattle at the spring sales was carried out on this assumption. However, with the inevitable ending of the "honeymoon" period, prices of fat cattle fell sharply during the summer and autumn, leaving many graziers with a price per head for their fat cattle little, if any, higher than that paid for the stores in the spring. This situation was aggravated by the operation of a scheme for deficiency payments, based on a twelve-month "rolling average" principle, which was described by one exasperated grazier as "the brain storm of a demented Whitehall genius". It seems probable that this scheme for deficiency payments was, in point of fact, more sinned against than sinning being, along with the summer grazier, a casualty of the unfortunate "honeymoon" period, an episode which added very considerably to the inevitable confusion in the fatstock market, and delayed the emergence of a more settled pattern of relative demand and price levels for different types and qualities of meat.

As far as sheep producers were concerned the first intimation that important changes in the economic circumstances affecting this enterprise had arisen as a result of decontrol came with the store lamb sales in the late summer of 1954. At these sales farmers seeking store lambs for winter feeding found themselves in active competition with butchers for lambs which during the control period would have been regarded as forward stores. Confirmation that under free market conditions consumers' preference, and with it producers' prices, would be markedly different from those under control came when root-fed hoggets appeared on the fatstock markets. It then became only too clear that the very heavy fat hogget, encouraged by Ministry of Food price schedules and forced upon the consumer by meat rationing, had bred a marked antipathy among the public for carcase fat in any form. The price realised by the heavy-weight hogget in the winter of 1954–5 was some £2 to £3 per head less than during the previous winter, and winter sheep feeders, who had bid for store lambs at the beginning of the winter-feeding period on the assumption that fat sheep prices under decontrol would not differ greatly from control prices in the previous winter, were left to carry substantial losses.

Public distaste for fat meat had killed overnight the economic basis of the practice of carrying hoggs on roots for extended periods during the winter months and selling out at heavy weights in late winter and early spring, a system of manage-

ment that under the Ministry of Food was not only profitable, but fitted in very well with the system of sheep farming practised on many mixed farms. The heavy price discrimination against over-weight sheep had also made much more uncertain the future for the system under which hoggs were carried through the winter on roots and sold out the following summer as fat sheep off grass after shearing, although the high price for fleece wool may still make this practice a feasible proposition for some long-wooled breeds of sheep.

A further feature that soon became apparent was that the price for ewe mutton was very considerably lower on the free market, a factor which had an immediate and substantial impact upon the cost of flock maintenance, while those fat lamb producers who were not concerned with the problems of root-fed sheep were given food for thought by the discovery that on the free market second grade New Zealand lamb was making a higher price per lb. than first grade.

The investigation with which this report deals is concerned with arable sheep flocks, and covers the period from the autumn of 1954 to the autumn of 1955; it thus coincided with the period in which changes in the economic circumstances arising from decontrol were becoming manifest, but during which the system of sheep management was still basically that which had proved profitable under control. This combination of pre-control systems of management and post-control economic circumstances proved particularly unfortunate for winter root-fed sheep, but affected the breeding flocks to a much lesser degree.

The Sample

The investigation deals with arable sheep flocks maintained in the lowland mixed farming areas of Somerset and Herefordshire, i.e. it relates to sheep flocks in which some, or all of the sheep maintained are folded over arable crops, on farms where crops and livestock are combined in an integrated system of husbandry. The extent and duration of folding and the type of sheep employed varies considerably between groups. All farms maintain a breeding flock, and normally all lambs, apart from those kept for flock replacement purposes, are sold fat, either directly off the ewe, as weaned fat lambs off grass, or later in the year as root-fed lambs or hoggets. In a number of cases additional store lambs are bought in for winter feeding, a practice which however, is markedly more common among the Herefordshire farms.

Complete results for a total of 70 farms and flocks were available for analysis from two main areas, the south and central lowland areas of Herefordshire, and the mixed farming areas of south and south-west Somerset. The Herefordshire flocks are divided into two groups, the Ross group consisting of 12 flocks on the light sandstone soils around Ross in the south of the county, and the Hereford group of 17 flocks situated mainly around the city of Hereford and to the west and south-west of it; this group also includes a few farms in a detached area in the Much Marcle district. The soil type in this group is predominantly medium loam, but approaches a heavy loam on some farms, especially to the north of Hereford and in the Marcle area.

In Somerset, the mixed farming areas in which the arable type of sheep enterprise is found stretch in a belt along the southern part of the county from Yeovil through South Petherton and Ilminster to Taunton, and thence westward into the Vale of Taunton Deane. Another area, to the north and west of this belt and separated from it by the Quantock Hills and the south-western extremity of the low-lying marshland of the Somerset Flats, runs from North Petherton, through Bridgwater, and along the lowland area between Bridgwater Bay and the Quantock and Brendon Hills to Dunster, with a southerly extension from Williton along the valley land between the two hill masses.

Soil types in these Somerset mixed farming areas are somewhat variable both between areas and even with individual farm boundaries, but are mostly covered by a range from light sandy soil to medium loam. Differences in soil type in these areas do not provide, as is the case in Herefordshire, a rational basis for differentiating between groups of farms, and the arable flocks in Somerset have been divided into three groups according to the time at which lambing occurs, a factor which largely determines the potentialities of the enterprise—especially in relation to the production of early fat lamb—and the system of management practised.

The earliest lambing group, described as the Somerset/Autumn group, consists of 9 farms where the ewes lamb down in September–October; the Somerset/Winter group contains 16 flocks lambing mainly in December–January, while there are another 16 flocks in the Somerset/Spring group lambing during the period February–March. Farms in the S/Autumn group are scattered throughout the mixed farming areas noted in Somerset; those in the S/Winter group most commonly occur in the lowland areas encircling the Quantock Hills, with a smaller concentration in the South Petherton area. Farms in the S/Spring group are located mainly in the Bridgwater Bay area around Stogursey, and further west around Washford and, with some exceptions, tend to be on slightly less productive land than those in the other two Somerset groups. Generally speaking, however, the farms with which this investigation is concerned are found on some of the most productive lowland arable areas in the two counties, and, indeed, in the West of England.

CROPS AND LIVESTOCK

On farms of the type with which we are concerned, the sheep enterprise is closely integrated with the farming system as a whole, and it is necessary to consider the general characteristics of these farms in relation to both the cropping and livestock aspects. Table 1 gives, in summary form, the distribution of crops at June 1955, while Table A in the appendix gives this data in greater detail. Table 2 and appendix Table B give similar data for livestock.

The great majority of farms in all groups are medium to large in size, averaging over 300 acres total farm area in all groups except the S/Winter where the average size is rather lower.

Farms in the S/Autumn group are both more intensive and more mixed in character than in either of the other two Somerset groups, with a higher proportion of tillage and of cash root crops; the relatively high proportion of the farm cropped with main crop roots and green fodder for stock feeding are supplemented by considerable areas of catch-crop roots and green fodders, grown mainly for the breeding ewes and their lambs during the winter, spring and early summer months. These catch crops, which are not included in the cropping shown in Table 1 which relates to crops in the ground

TABLE 1.

Cropping at June 4th, 1955. Average per 100 Acres of Total Farm Area. Rental Value per Farm and per Acre

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
Number of Farms	9	16	16	12	17
Average Total Farm Area (Ac.)	304	261	345	312	321
Average per 100 acres of Total Farm Area:	Acres	Acres	Acres	Acres	Acres
TILLAGE:					
(1) Grain Crops	25·0	20·2	22·8	32·8	26·3
(2) Roots and Green fodders:					
(*a*) For Sale	10·7	5·4	1·0	4·5	4·4
(*b*) For Feeding	9·9	8·4	7·6	5·1	5·5
Total	20·6	13·8	8·6	9·6	9·9
Total Tillage	45·6	34·0	31·4	42·4	36·2
GRASSLAND:					
(*a*) For Mowing	21·5	24·1	22·4	19·2	21·5
(*b*) For Grazing	29·6	38·9	43·5	33·9	32·6
(*c*) Grass Orchards	2·3	1·8	1·0	3·2	5·6
Total Grassland	53·4	64·8	66·9	56·3	59·7
Rough grazings, woods, waste, roads and buildings	1·0	1·2	1·7	1·3	4·1
Total Farm Area	100·0	100·0	100·0	100·0	100·0
RENTAL VALUE:					
Average per Farm					
Farmhouse, cottages and buildings	£ 198	£ 144	£ 135	£ 139	£ 137
Land	649	610	584	564	580
Total Farm Rental	847	754	719	703	717
Average per Acre:					
(*a*) Total Farm Rental	2·78	2·90	2·08	2·25	2·23
(*b*) Land only	2·13	2·34	1·69	1·81	1·81

TABLE 2.

Stocking at June 4th, 1955. Average Numbers of Stock per 100 Acres Total Farm Area

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
Average Number per 100 acres of Total Farm Area:	No.	No.	No.	No.	No.
(1) Cattle:					
(*a*) Cows: Dairy	7·6	10·9	4·6	1·6	2·0
Beef	1·9	1·1	2·9	4·8	3·8
Total	9·5	12·0	7·5	6·4	5·8
(*b*) Other Cattle	20·7	26·2	23·2	24·3	20·3
Total Cattle	30·2	38·2	30·7	30·7	26·1
(2) Sheep:					
(*a*) Ewes	51	48	48	41	39
(*b*) Other Sheep	24	52	65	55	58
Total Sheep	75	100	113	96	97
(3) Horses	0·5	0·5	0·5	0·5	0·4
(4) Pigs	20	24	7	7	3
(5) Poultry	147	129	62	33	55
Cow Equivalent Units:					
(*a*) Per 100 acres Total Farm Area	46·1	53·7	43·8	36·5	35·6
(*b*) Per 100 acres Total Feed Area*	68·3	65·8	53·3	53·0	47·2

* Total Farm Area less acreage of sale crops.

on June 4th, amount on average to 9 acres per farm, and play a vital role in the provision of keep for these autumn-lambing flocks. Catch crops most commonly follow early potatoes, arable silage and green peas, while sometimes a one-year ley may be ploughed immediately the hay crop is off. In addition, corn crops are sometimes undersown with rye-grass to provide winter and early spring keep, while, when conditions permit, vetches and oats, trefoil, rye-grass etc., may be sown in late summer after a corn crop has been harvested, to be eaten off by sheep in the following spring and early summer.

Although the proportion of the total farm area under grass is, of necessity, relatively low, the very considerable acreages of arable fodder crops grown enables a very high density of stocking to be maintained. Cattle in this group are predominantly dairy stock, but some farms also have a subsidiary

beef-rearing enterprise based on colour-marked calves produced by the dairy herd. Poultry and/or pigs are also kept on a considerable scale on most farms in this group. It is worth noting that in this group sheep numbers at June 4th are at a minimum, as most of the current year's lamb crop will have been sold off fat, and, with the breeding flock recently made up for tupping, draft ewes have also been disposed of. Had sheep numbers in this group been taken at a stage in the breeding cycle comparable to that reached by flocks in other groups at June 4th the average number of sheep per 100 acres would be over 100 head instead of the 75 per 100 acres actually recorded.

Farms in the S/Winter group are, on average, somewhat smaller in total farm area, with a markedly smaller proportion of the land in tillage, and in cash crops, especially sugar beet and potatoes. The balance of enterprises in this group is more towards livestock, especially dairy cattle, with pigs and poultry kept on a considerable scale.

In the S/Spring group farms are larger than in either of the other two groups, averaging nearly 350 acres per farm and, generally speaking, are on somewhat less fertile land and managed along more extensive lines. The proportion of tillage is lower in this group and cash crops, especially cash root crops, are only of minor importance. Cropping is generally directed towards providing feed for livestock, although a certain amount of wheat and barley is grown for sale. Among livestock enterprises pigs and poultry are of slight importance, while cattle enterprises are much more commonly concerned with beef cattle than in the other two Somerset groups. The most marked difference however relates to the relative emphasis placed on sheep in this group: whereas the sheep enterprise in the other groups is regarded more as subsidiary to the arable side of the farm, in the S/Spring group, sheep, although closely integrated into the general farming system, are regarded as an enterprise in their own right, and constitute one of the main income-earning branches of the farm.

Of the two Herefordshire groups, farms in the Ross group are generally more intensively cropped and stocked than those in the Hereford group, with a proportion of tillage and cash crops not far behind those in the S/Autumn group. Feeding-roots however occupy relatively little of the farm area and, with virtually no catch cropping undertaken, the density of stocking is much below that in the S/Autumn group. Cattle are predominantly for beef, and both rearing and feeding,

mainly winter feeding, are practised on most farms in the Ross group. Farms on the heavier land in the Hereford group have a smaller proportion of tillage and of cash crops. Stocking intensity is slightly lower than in the Ross group, and although beef cattle predominate, little rearing is undertaken on farms in the Hereford group, adult store cattle being bought both for winter yarding and summer grazing. In neither of the two Herefordshire groups do pigs or poultry play more than a minor role.

RENTAL VALUE

Rental values averaged between £700 and £850 per farm in all groups, of which farmhouse, buildings and cottages were estimated to account for between £135 and £145 per farm for all groups except the S/Autumn where the corresponding figure is nearly £200 per farm; in this group three farms had recently incurred substantial additions to their rent in respect of extensive modifications and additions made to the farm buildings.

Total farm rental per acre of total farm area averaged 55*s*. in the S/Autumn group, 58*s*. per acre for the smaller farms in the S/Winter group and 42*s*. for the larger farms on rather less productive land in the S/Spring group: the corresponding figure for both the Herefordshire groups is approximately 45*s*. per acre.

ROTATIONS

Although cropping requirements of war and post-war years considerably upset established rotations, farmers in Herefordshire are, in general, gradually working back to the pre-war position when rotations were fairly rigidly defined and adhered to. The traditional system in this county is for two-compartment farming, with the arable sector cropped on the five-course shift, although the rotation is sometimes lengthened to six shifts by the inclusion of an additional corn or cash root crop. In the mixed farming areas of Somerset rotations are much less rigidly regarded; in many cases it would be more accurate to refer to a general plan of crop sequence rather than to a rotation as usually defined, but this plan is held flexible and will be readily departed from as occasion and circumstance require.

Among the Somerset groups something approaching a

consistent rotation is more commonly found in the S/Spring group, and here farms are divided between those practising a five- or six-course rotation including a one-year ley and those with an eight-course rotation including a three-year ley, while some farms have both types in operation: generally this eight-course rotation is also restricted to the arable section of the farm, and has been adopted to reduce the proportion of land under tillage. In the S/Autumn group a four- or five-course rotation is most commonly followed on the arable land, but on some farms in this group, and also in the S/Spring group on a few farms, generally those owner-occupied, the area of permanent grass has been much reduced, and most of the farm brought into a ley-farming system based on a seven- to eight-year shift including a three-year ley. In the S/Winter group, especially among those farms on light sandy soils, cropping policy is extremely flexible, but a rotation of crops often found covers an eleven year period during which, in a variety of sequences, four corn crops, four root crops (mainly for sale) and a three-year ley are taken. Farms in this group which are on rather heavier land usually crop on a four to six-course rotation including a one-year ley, or on an eight-year shift including a three-year ley, or with some combination of these two systems.

SHEEP MANAGEMENT

S/Autumn. In this group very little winter feeding of hoggs is practised, and the sheep enterprise centres upon the breeding flock and the production of out-of-season and early fat lamb. Breed of ewe is almost exclusively the Dorset Horn, the great majority of which are pure-bred, though some cross-bred Horn ewes are maintained in one or two cases, and in three flocks a small proportion of Dorset Down ewes are run together with the Horns. Fewer than one-half of the flocks in this group breed their own replacements, but where this is the case the Dorset Horn ram is used on the whole or the main part of the flock: in all cases where ewe replacements are purchased Dorset Down rams are used exclusively.

Lambing in this group takes place, on grass, in September–October, and the ewes and lambs move into folded roots when lambs are about a month old; a sequence of root crops is provided until April, when the folds are moved to green crops such as vetches, vetches and oats or rye-grass, trefoil etc., which carry the ewes, and any remaining lambs, through to

the end of May or June. Folding is more prolonged in this group than in any other, sheep being in hurdles continuously for six to eight months—nine months in one case. Although folds are moved daily, close folding is unusual, sheep generally running back over the ground covered by several previous pennings, while lambs have access to a forward fold. Hand feeding of ewes and lambs, especially with corn, is very heavy, and the system of sheep management is much more intensive than in any of the other groups studied. The great majority of lambs are sold fat off the ewes, sales commencing in February, rising to a peak in March and April and remaining at a high level throughout May. Sales of fat weaned lambs—mainly the progeny of the few Dorset Down ewes kept along with the Horns—are small.

S/Winter. In this group sales of sheep are fairly evenly divided between fat lambs and root-fed hoggets, the latter, sold mainly in February and March, accounting for 43 per cent of total fat animals. Suck lambs are responsible for 35 per cent of total sales, but in this group sales do not commence on any scale until the second half of April, and nearly two-thirds of sales of this class of sheep fall in the single month of May. Breeding ewes in this group are predominantly Dorset Down, mainly pure-bred, but four flocks consisted of a mixture of breeds in which, apart from the Dorset Downs, Dorset Horn Clun and Devon Closewool ewes are represented. Three-quarters of all flocks in this group are wholly or partially self-maintained. Dorset Down rams are used in all flocks except two, while other breeds of ram, used for crossing, included Dorset Horn, Ryeland, Suffolk, Oxford and Southdown.

Lambing in the S/Winter group takes place in December–January and in the majority of cases the breeding ewes remain at grass until after lambing, when ewes and lambs go into folds on roots. In some cases, and especially on those farms where considerable numbers of hoggs are fed out off roots, ewes run over the root fields to clear up behind the hoggs, but they are removed for lambing and then return to the roots in their own folds. Close folding is rarely practised for either ewes or hoggs, and a run back on to a grass field is sometimes provided for ewes and lambs. Folding generally finishes in March–April, both for hoggs and ewes, and further folding for the ewes and lambs on vetches, etc., is provided on only a few farms. Lambs not sold off the ewes are weaned, on different farms, at various dates between mid-June and the end of July.

S/Spring. In this group the production of fat hoggets forms the main objective of the sheep enterprise, and these, sold mainly from February to April with a peak in March, account for more than two-thirds of total fat sheep sold. Sales of suck lambs, mainly in June, account for only 8 per cent, and approximately one-quarter of total sales consists of weaned fat lambs sold from July onwards, with a marked peak in August, and another in November.

Breeding ewes are pure- or cross-bred Dorset Down on the majority of farms, but two flocks consisted of Cluns, one of Hampshire Downs, one of Border Leicester crosses, and one a mixed flock of Cluns and Dorset Downs. Among the rams in use in these flocks the Dorset Down predominates, but Dorset Horn, Ryeland and Suffolk rams were also used. The Hampshire Down flock was bred pure, as also was one of the Clun flocks, the other being partly pure-bred to provide flock replacements and partly crossed for fat-lamb production. Half the flocks in this group bred all their own replacements while most of the remaining flocks relied partly upon purchased and partly upon home-bred replacements.

Folding of fat hoggs begins most commonly in the S/Spring group towards the end of October or early in November, and the sheep remain on roots until sold. The ewe flocks, which lamb down in February–March, generally run over the root fields behind the hoggs, but for lambing they are either provided with a grass run-back, or are removed from the root fields entirely. In either case, after lambing, the ewes and lambs return to the roots in their own folds, separate from the fat hoggs, where they remain until the roots are finished in March–April. Early summer folding on green crops is not undertaken at all in this group. Folding, both for fat sheep and breeding ewes is usually of an extensive type, with large folds provided often only at weekly intervals. Weaning normally takes place in July or early August.

Ross. In this group also, fat hoggets, sold mainly in February–March, are responsible for roughly two-thirds of total sales, and fat weaned lambs, with sales spread fairly evenly over the four months September–December, accounting for the balance. All breeding ewes, with the exception of one flock of cross-bred Shropshire ewes, are of the Clun or Kerry type, and the great majority of these flocks are maintained, mainly or entirely, by purchased replacements. The most commonly used breed of ram is the Hampshire, followed by the Shropshire, but one-half of the farms used two different

breeds of rams which included rams of the Oxford, Kerry and Clun breeds.

Root-fed hoggs in the Ross group enter the folds early in November, and remain there until sold. Although a fairly extensive type of folding is usually practised, a few cases of close-folding were encountered in this group. The breeding flock however is much less commonly folded here than in Somerset, and half the flocks in this group were never in hurdles at any time of the year, while in the remaining flocks ewes were folded for only a relatively short period prior to lambing. Lambing takes place in February and March, and weaning between mid-July and the end of August.

Hereford. The relative importance of winter-fed sheep is even greater in this group, and fat hoggets, sold from January right through to June with a marked peak in April accounted for more than four-fifths of total sales of fat sheep. Folding starts towards the end of November, and continues right through until May in some cases. Close-folding with the pens moved twice daily was a more common practice here than in any other group, and on four farms roots were chopped for the hoggs later in the winter. On farms in this area, where the land is fairly heavy, ewes were only folded in a few cases, and then for only a relatively short period.

Among breeding flocks there is a marked preponderance of the Clun and Clun-type ewe in this group, but flocks of Kerries, and Shropshire and Oxford Down crosses are also kept. The great majority of flocks are wholly or mainly replenished by purchased replacements. The Oxford Down was the breed of ram most commonly used in this group for the 1955 lamb crop, followed by Hampshire, Clun, Suffolk and Shropshire breeds: it is significant however that for the 1956 lamb crops the relative importance of the Oxford Down ram was much reduced, and Suffolk, Clun, Hampshire and Oxford rams were equally represented among those used. Lambing in the Hereford group takes place mainly in March, with a smaller proportion of lambs dropped in February and April: weaning occurs between mid-July and early September.

THE SEASON 1954–5

Sheep, living out-doors all the year round, and maintained largely upon home-grown foods consumed in situ, are dependent to a unique degree upon their immediate environment for their well-being. Of the environmental factors to which

they are exposed, climatic conditions are probably the most important, operating both directly upon the animal itself, and indirectly through the influence that weather conditions exert upon food supplies.

The twelve-month period covered by this investigation provided some rather extreme types of weather conditions. September 1954 was dry and sunny, but this favourable period was followed in the second half of October by an unusually wet period which lasted throughout November, giving way to mild but stormy weather in December. The turn of the year brought an onset of wintry conditions which lasted, with only a short intermission at the end of January, right through to the end of March. During this period spells of frost and snow alternated with brief thaws. Spring, two to four weeks later than usual in arriving, commenced with a drought which particularly affected Somerset, and was followed by a cold spell in May which brought brief but appreciable falls of snow, especially in Herefordshire. June experienced cool and changeable weather but the following three months, July to September, saw temperatures well above normal, especially in August, while very dry conditions prevailed over much of this period, broken only by local thunderstorms.

Winter weather conditions were very unfavourable for folded sheep, the heavy rains in November turning the folds into a quagmire and, in one or two extreme cases, necessitating the removal of sheep entirely from the root fields for a period; the alternate periods of frost and thaw after the New Year served to perpetuate poor conditions underfoot in the folds. Perhaps the sheep most affected by the poor weather conditions early in the winter were the ewes and lambs in the S/Autumn group. These flocks generally experienced ideal conditions for lambing—warm and dry—during September and early October, although some of the later-lambing flocks in this group ran into very wet conditions later in October. The very bad conditions that developed in the folds in November however proved extremely trying, especially for the very young lambs, and greatly exacerbated outbreaks of "Orf" (pustular dermatitis) which occurred in some flocks.

Winter weather conditions affect sheep most directly during the lambing period, and, of the many types of weather that an English winter can produce, cold wet conditions with driving rain or sleet are least to be welcomed at this time. Flocks in the S/Winter group, lambing in December–January, experienced either mild but very wet weather before Christmas, or

very cold weather after. Flocks in the S/Spring group, and in the two Herefordshire groups, lambing mainly in February–March, suffered from unfavourable conditions occasioned by alternating periods of frost, snow and thaw.

The spring of 1955 too was a difficult period, with cold, dry weather which delayed the growth of grass by two to four weeks, necessitating a prolongation of the hand-feeding period. Following this period of spring drought the return to wintry conditions in May brought another set-back, which even compelled the reappearance of the feeding troughs for a short period on a few farms. The hot, dry weather during the summer months suited sheep extremely well, for, although grass keep was very short owing to the late spring, and cattle suffered as a result, the pastures were ideal for sheep, which, generally speaking, were contented and did extremely well, ewes in particular tending to become over-fat. On those farms, however, where the density of stocking of the pastures is maintained at a level well above average, the hot dry weather revealed the risks run in a season such as this of permitting the intensity of stocking to press too hard upon the productive resources of the grassland. Most farms during the grazing season have an adequate safety margin which, although it means some wastage of grass during a flush season, also ensures that unfavourable conditions can be weathered without undue difficulty. Heavy stocking however reduces this margin, and in some such cases the prolonged dry period in the summer of 1955 not only severely checked the growth of cattle, but sheep also, and weaned lambs in particular experienced a marked set-back. This shortage of keep for sheep on the more heavily stocked farms was most marked in the Herefordshire groups, where considerable reliance is placed upon undersown leys to provide grazing for the sheep in late summer after the corn is harvested: in the event there was little or nothing available from this source and the sheep suffered in consequence. These heavily-stocked farms are, however, but a small minority in each group, and the summer of 1955 was generally a very good one for sheep.

On the whole, farmers concerned in the investigation were agreed that from the point of view of weather conditions 1954–5, although far from ideal, was not an unfavourable year for sheep. Poor weather conditions during the winter months and the lateness of the spring were offset by abundant supplies of winter keep, and although sheep experienced a considerable amount of discomfort in the folds their progress

was not impeded to any appreciable extent: later in the year, during the summer drought, sheep did exceptionally well on the great majority of farms.

Neither was the year a particularly troublesome one from the point of view of disease among sheep: in the S/Autumn group outbreaks of "Orf" occurred, and a surprisingly high proportion of farmers in all groups reported an unusually heavy incidence of foot rot during the very dry summer months. Some rather heavy losses of new-born lambs occurred among a few of the flocks that were unfortunate enough to encounter very bad conditions at lambing, though this was by no means a general experience: more commonly, difficulty was experienced with chilled udders, inadequate milk supply, and poor mothering. Also, rather more trouble than usual was experienced towards the end of the summer, especially among the Dorset Horn and Down flocks, with over-fat ewes getting on their backs, a circumstance which necessitated visits to the flock several times during the day at a time of year when sheep would otherwise require the minimum of attention, and when the absence of even one person on such an errand may often involve the disruption of a smoothly-running harvesting gang.

The Investigation: Arable Sheep, 1954–5

The primary purpose of this investigation is to determine the level of Production and of Production Costs for the entire sheep enterprise, i.e. the data covers all sheep maintained on the farm, regardless of the relative proportions of breeding ewes and winter root-fed hoggs on different farms. The field data however was collected in a form which permits a separate calculation of production and costs for the two main branches of the enterprise, the breeding flock and the winter root-fed sheep. The attempt to separate these two, often closely inter-related, branches of sheep husbandry obviously involves a number of apportionments of common factors of production which is unnecessary when the enterprise as a whole is under consideration.

The results of the investigation are presented in three sections, the first dealing with the breeding flock, the second with the winter root-fed hoggs, and the final section dealing with the complete sheep enterprise.

METHOD OF COSTING

The methods adopted for the assessment of the various items of Production and Production Costs involved are as follows:

PRODUCTION

(1) PRODUCTION OF SHEEP

The production of sheep is calculated by adding the sum realised by the sale of sheep during the year to the valuation of sheep on hand at the end of the year, and deducting from this total the opening valuation plus purchases of sheep. Initially, all valuations of sheep were made at market prices ruling at the time of valuation. There was, however, a fall in the average market values of most classes of sheep between the time of opening and closing valuations, a fall which, as far as the breeding flock is concerned, represents a capital loss. In order to exclude this element of capital loss from the assessment of current production, breeding ewes and ewe lambs retained for flock replacement purposes have been valued, in each age-group, at the same figure per head in opening and closing valuations, the figure used being the mean of the market values recorded at the beginning and end of the year. Sheep held for sale have been valued at actual market prices ruling at the time of the valuation.

(2) TOTAL PRODUCTION

Total production is the sum of production of sheep together with sales of wool.

PRODUCTION COSTS

(A) FOODS

(1) *Purchased Foods*

All purchased foods, including winter keep taken, are entered at actual cost.

(2) *Home-grown Foods*

(a) Folded Roots: the actual cost of production for most folded root crops has been ascertained on the majority of farms, and the cost, as ascertained, applied to the individual crop concerned. Where such information is not available for any particular crop on an individual farm, the average cost for that crop obtained on other farms in the same area has

been used. Sugar beet tops fed to sheep have been charged, in all cases, at £7 12*s.* 0*d.* per acre. The average costs of production for the main classes of folded roots are summarised below, and set out in detail in Appendix Tables C and D.

Average Production Costs per Acre

	Somerset Farms	Herefordshire Farms
	£	£
Folded Roots:		
(i) *Main Crop:*		
(*a*) Swedes	21·3	23·0
(*b*) Swedes and Kale	19·1	—
(*c*) Kale	16·8	20·6
(*d*) Other Main Crop	13·8	14·3
(ii) *Catch Crop*		
(*a*) Swedes/Turnips/Rape, etc.	9·0	7·8
(*b*) Oats and Vetches	9·1	—
(*c*) Trefoil: Trifolium with rye-grass, etc.	6·0	—

(b) Hand-fed Foods: For hand-fed home-grown foods, estimated average costs of production have been used for all farms as follows:

	Estimated Cost per ton
	£
Hay { Long	5.50
Hay { Chaffed	6·25
Pea Haulm	2·50
Feeding Corn	16.00
Beans	21·00
Kale	1·20 in ground
Mangolds	1·60 in cave/root-house
Cabbage	1·45 in ground
Turnips/Swedes	1·30 in ground

(c) Grazing: Full grassland costs have been determined for each farm in the sample, and the total cost of grazing, ascertained from this data, has been apportioned between the various classes of stock at grass according to the following scale of grazing equivalents:

	Grazing Equivalents
Cattle:	
Two years old and over	1
One to two years	three-quarters
Under one year	one-third
Sheep:	
Ewes	one-fifth
Others over one year old	one-eighth
Lambs 6 to 12 months	one-tenth
Lambs under 6 months	one-fifteenth
Horses:	
Working horses	1¼
Other horses	four-fifths

Where pigs and/or poultry are running on grassland in appreciable numbers an allowance has been made as follows:

	Grazing Equivalents
Pigs:	
Over 6 months old	one-sixth
Two to 6 months	one-twelfth
Poultry	
Hens	one-hundredth
Pullets	one-two-hundredth

The above scale of grazing equivalents relates to stock at grass day and night; grazing by day only has been reckoned at two-thirds of the full-time rate. Sheep folded with a run-back to grass have been calculated at one-quarter of the full-time grazing rate for the corresponding class of sheep.

The total annual cost of grazing has been apportioned between winter and summer periods in the proportion one-fifth to the winter six-months and four-fifths to summer six-months in the case of the Somerset farms, and for Herefordshire, where the growth of grass in the winter is relatively less, in the ratio one-sixth to five-sixths.

(B) RESIDUAL MANURIAL VALUES

Residual values for fertilizers and F.Y.M. applied to crops have been allowed for in the calculation of production costs: no allowance has been made, however, for residual manurial values arising from foods fed to sheep, either for hand-fed foods or for folded roots.

(C) LABOUR AND POWER

(1) *Manual Labour*

For field work associated with crop or grassland production, an average figure per hour for adult male workers has been charged as follows:

	Per hour s.	d.
Up to January 1955	3	0
February 1955 and after	3	1¾

All work done, either by paid or family workers, has been charged at the same figure (with appropriate adjustments for work done by women and youths), and any work done in overtime periods has been charged, in all cases, at the appropriate overtime rate.

For work directly concerned with sheep the actual rate paid, adjusted to allow for holidays and sickness with pay and for the employer's share of insurances, has been used in cases where full-time shepherds are employed. In all other cases the following rates have been used.

	Per hour s.	d.
Up to January, 1955	3	2
February 1955 and after	3	4

(2) *Tractors*

All tractor work, both on crop production and directly associated with sheep, has been charged as follows:

	Per hour s.	d.
Light wheeled tractor	3	6
Medium wheeled tractor	3	9
Heavy wheeled tractor	4	0
Crawler tractor	6	0

These rates, which relate to running time, are designed to cover all costs, including depreciation, but are exclusive of the cost of the tractor driver.

(3) *Horses*

Horses have been entered at 1*s.* 6*d.* per working hour.

(4) *Cars, Vans, etc.*

Cars, vans, etc., used in connection with shepherding have been charged at 6*d.* per mile.

(D) MANURE

(1) *Farm Yard Manure*

Farm-yard manure applied to crops or grassland has been charged at 15*s.* per ton plus the cost of hauling and spreading.

(2) *Artificials*

Artificials have been charged at cost; in the case of both artificials and F.Y.M. appropriate adjustments have been made for residual manurial values.

(E) FIELD COSTS

These are costs of an overhead nature associated with crop and grassland production; treatment of these items is as follows:

(1) *Rent*

From the total actual farm rent, or the rental value, deductions have been made for the rental value of farmhouse, buildings and cottages, and the balance is charged at a flat rate per acre over the total acreage of crops and grass.

(2) *Lime*

The average quantity of lime applied over the past few years has been ascertained for each farm, and the net cost of this dressing, together with the net cost of applying it has been calculated at 1954–5 prices. The cost of liming thus obtained has been charged to crops and grassland on a flat rate per acre basis for each farm.

(3) *Upkeep of hedges, ditches, etc.*

Estimated costs, as follows, have been charged per acre to all crops and grassland costed.

	Per acre s. d.
Somerset farms	8 0
Herefordshire	6 0

The higher figure for Somerset makes allowance for the more extensive nature of hedges, banks and ditches in this county.

(F) IMPLEMENTS, REPAIRS AND DEPRECIATION

Estimated costs for repairs and depreciation of cultivating implements, carts, trailers, drills, manure distributors, etc., have been charged to costed crops as follows:

	Per acre s. d.
Ley establishment: direct seeded	20 0
Grassland	6 0
Roots and green fodder crops:	
(*a*) Main crop	28 0
(*b*) Catch crop	10*s.* to 20*s.* according to amount of work done for the crop.

(G) SHEEP EQUIPMENT: REPAIRS AND DEPRECIATION

A valuation, based on current realisation values, has been made for all farms of all equipment directly connected with the sheep enterprise. The valuations of such items as mills, chaff and root cutters, engines etc., where they are also used for stock other than sheep, have been apportioned on the basis of relative usage. Depreciation has been charged at 15 per cent of the valuation, and the actual cost of repairs incurred during the year has been ascertained.

(H) COSTS OMITTED

(1) General Farm Expenses
(2) Interest on Capital
(3) Management.

(I) CREDITS OMITTED

(1) The residual manurial value of all foods fed to sheep.
(2) Any beneficial cultivations involved in the production of folded root crops.

In order to compare results for the two main branches of the sheep enterprise with one another, and with the enterprise as a whole, and to compare results for the sheep enterprise with those obtained in other branches of farming, it is necessary to relate production and costs to the acreage of the farm utilised by the sheep. The determination of the acreage actually utilised by sheep presents some difficult problems of apportionment, and the results obtained are, of necessity, subject to an appreciable margin of error. The sheep on any particular farm may have consumed, for example, 30 cwt. of hay and 20 cwt. of corn, both quantities representing the yield obtained from one acre of land. But this clearly does not mean that the corn or the hay consumed represents the total annual production from one acre: in the former case straw has also been produced and in the latter case grazing is available after, and sometimes before the hay crop is taken. Similarly with root crops: roots grown as a main crop represent the entire annual production from the land devoted to them, but catch crops taken after early potatoes, or between a corn crop and a root crop in the following year represent only a proportion of the annual production of the land on which they are grown.

It is necessary therefore, in determining the acreage devoted to any enterprise to distinguish between "actual" acres and "annual" acres. The "actual" acreage of hay is the area cut,

but the "annual" acreage of hay is the acreage cut adjusted to allow for the additional production of grass obtained from the hay acreage later in the season. Thus, if it is assumed that one cut of hay absorbs only one-half of the total quantity of grass produced on the hayland during the year, then one "actual" acre of hay is equal to only one-half "annual" acre.

In determining, for any particular farm, the "annual" acreage devoted to sheep the following procedure has been followed. Estimates were obtained of the normal yield per acre, on the farm concerned, for any hand-fed foods fed to sheep, and these yields, divided into the total quantities of foods fed gives the "actual" acreage of the particular crop consumed by sheep. "Actual" acres are then converted into "annual" acres according to the following scale:

One "Actual" acre of:		"Annual" acres
Hay	=	one-half
Pea haulm	=	one-sixth
Oats: Dredge corn	=	five-sixths
Barley: Wheat	=	six-sevenths
Beans	=	1
Roots: main crop	=	1
catch crop	=	one-half
Sugar beet tops	=	one-third
Pasture (i.e. land not mown)	=	1
Aftermath: cut once	=	one-half
cut twice	=	three-tenths
cut three times	=	one-fifth

Breeding Flocks, 1954–5

Overall results for the Breeding Flocks for the year 1954–5 are set out in Table 3. Owing to difficulty in a few cases in separating the data for the breeding flock from that of the winter-fed sheep the number of breeding flocks included in this analysis is one less than the total number costed in each of the S/Winter, S/Spring and Ross groups.

The breeding flock includes not only ewes and stock rams but any ewe hoggs (tegs) maintained for flock replacement purposes. Production, Production Costs and Margin thus all relate to ewes, rams and followers, but the figures are all calculated, in the first instance, on the number of ewes in the flocks at the time of the opening valuation in September–October 1954. Table 1 shows however that whereas in the Somerset groups the number of followers carried was, on average, from 14 to 18 per 100 ewes, the corresponding figure in the Hereford group is 9, while in the Ross group it is only 4 followers per 100 ewes. Where the number of followers

TABLE 3.

Summary of Average Production and Production Costs per Ewe and per Annual Sheep Acre, 1954-5

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
Number of Flocks	9	15	15	11	17
Number of Ewes per flock	150	125	176	149	128
Number of Followers per 100 Ewes	14	18	18	4	9
Number of Lambs reared per 100 Ewes	118	106	112	127	132
	Average per Ewe				
	£	£	£	£	£
Production:					
Value of Lambs produced	9·97	7·51	7·43	8·40	8·61
Less Net Depreciation of Breeding Flock	1·89	1·27	1·42	2·12	1·77
Production of Sheep	8·08	6·24	6·01	6·28	6·84
Sales of Wool: Breeding Flock	1·94	2·12	2·11	1·90	2·01
Total Production	10·02	8·36	8·12	8·18	8·85
Production Costs:					
(1) Food and Grazing:					
(*a*) Folded Roots and Green fodder	2·12	1·37	1·09	0·56	0·25
(*b*) Hand-fed Foods	1·89	1·27	0·58	0·84	1·40
(*c*) Grazing	1·04	1·38	1·60	1·47	1·78
Total Foods and Grazing	5·05	4·02	3·27	2·87	3·43
(2) Labour and Power	1·94	1·71	1·33	1·16	1·37
(3) Miscellaneous Costs	0·60	0·49	0·34	0·53	0·45
Total Production Costs	7·59	6·22	4·94	4·56	5·25
Margin: Surplus	2·43	2·14	3·18	3·62	3·60
Annual Sheep Acres per Ewe	Acres 0·36	Acres 0·40	Acres 0·50	Acres 0·42	Acres 0·53
	Average per Annual Sheep Acre				
	£	£	£	£	£
Total Production	27·88	20·81	16·11	19·52	16·62
Total Production Costs	21·12	15·48	9·80	10·88	9·86
Margin: Surplus	6·76	5·33	6·31	8·64	6·76

carried per 100 ewes in a flock or group of flocks is higher, the level of production and production costs per ewe will be higher than where relatively fewer followers are carried: conversely the annual acreage required by the breeding flock

will be greater, per ewe, where the proportion of followers is greater.

There is no very great difference between the groups in the average size of breeding flock. The most common size is between 100 and 150 ewes per flock, and this range accounts for more than half the flocks in all groups except the S/Spring, where flocks of 150–200 ewes are more numerous. The number of lambs reared per 100 ewes is markedly higher among the predominantly Clun and Kerry type ewes of the Ross and Hereford groups, and slightly higher for the flocks of Dorset Horn ewes in the S/Autumn group than for the predominantly Dorset Down ewes in the other two Somerset groups.

If intensity of production is measured either by total production, or by total costs, it is highest in the S/Autumn group and lowest, measured on total production in the S/Spring group, and lowest in the Ross group on a total cost basis. Total production in the S/Autumn group is 23 per cent higher than in the S/Spring group, and 22 per cent higher than in the Ross group, but total costs in the S/Autumn group are 54 per cent and 66 per cent greater. Margin per ewe is lowest in the two groups with highest costs, but these figures take no account of the farm acreage involved: calculation of the results per annual sheep acre bring the margins for the groups much more closely in line, and result in some changes in the order of margin. The Ross group has the highest margin both per ewe and per acre, but the S/Autumn group, with the second lowest margin per ewe, shares second place with the Hereford group in margin per acre.

The figures in Table 3 give only the barest outline of the results, and to understand the differences between the groups that arise from their very different systems of management it is necessary to study the results in much greater detail. The sections of the report which follow are concerned with the analysis of the constituent items of Production and Production Costs.

PRODUCTION

Total production of the breeding flock, for the year, consists of the value of lambs produced and of wool sold from ewes, rams, lambs and followers, less the net cost of depreciation of the breeding flock.

(1) VALUE OF LAMBS

The value of lambs produced per ewe depends upon the number of lambs reared per ewe and the average value realised per head. The number of lambs reared per ewe depends upon the number born per ewe, and the proportion of those born that survive; that is, it depends upon the fecundity of the flock and upon the efficiency with which shepherding is undertaken.

(a) *Lambing Results*

Data relating to lambing results are given in Table 4. The figures are restricted to adult ewes, i.e. two-tooth and older, the results for any ewe lambs bred having been eliminated. It may be noted in passing that, taking the combined figures for all flocks in the investigation, a total of just over 300 lambs were put to ram, of which 62 per cent later proved to be in-lamb; these produced just over, and reared just under, 1 lamb per head of those lambing. Lambs reared per 100 ewe lambs put to ram averaged fifty-six.

The first aspect of flock fertility is indicated by the proportion of barren ewes; the normal proportion was 2 to 3 per cent in all groups except in the S/Autumn, where more than 7 per cent on average failed to get in-lamb. This high proportion of barreners is partly due to the fact that even for Dorset Horn ewes May–June is not as favourable a time for tupping as in the autumn: it is also partly a result of a general practice among flocks of this breed for access to the ram to be restricted in order that lambing be confined to a relatively short period.

The second aspect of flock fertility is represented by the fecundity of the ewes, and is measured by the number of lambs conceived per 100 ewes lambing: this ranged from 131 per 100 ewes in the S/Winter group to nearly 160 in the Ross and Hereford groups. The third aspect is seen in the number of lambs born alive i.e., total births less those lambs which were dead at birth, or so weakly that they failed to survive the first few hours. Losses at this stage averaged under 6 per cent of total births in the Hereford group, between 6 and 7 per cent in the two early lambing groups, and over 8 per cent in the S/Spring group.

The three aspects of fertility are brought together, and the overall results expressed and compared in terms of the number of lambs born alive per 100 ewes put to ram: this averaged 118 in the two early lambing groups, 124 in the S/Spring group and just over 140 lambs per 100 ewes in the Ross and Hereford groups. Before arriving at the final measure of the number of

lambs reared per 100 ewes, account must be taken of the number of lambs dying between birth and weaning. These losses, the great majority of which occurred in the first few weeks of life, averaged between 8 and 12 per 100 ewes in all groups except the S/Autumn group where the proportion was not much above 3 per cent. Ewes in this group lambed down

TABLE 4.

Lambing Results, 1954-5

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
(A) Breeding Ewes[a]	No.	No.	No.	No.	No.
(*a*) *per* 100 *ewes tupped:*					
Number tupped	100·0	100·0	100·0	100·0	100·0
,, dying prior to lambing	1·3	1·1	1·2	1·8	0·9
,, alive at lambing	98·7	98·9	98·8	98·2	99·1
,, barren[b]	7·4	2·8	3·2	2·1	2·5
,, lambing	91·3	96·1	95·6	96·1	96·6
,, dying during lambing	1·3	2·3	4·0	2·1	2·9
,, dying subsequently	2·9	3·6	2·1	4·6	3·3
Total deaths during year	5·5	7·0	7·3	8·5	7·1
(B) Lambs: *per* 100 *ewes tupped.*					
Total number born alive and dead	125·5	125·7	135·2	152·3	151·6
Number born dead[c]	8·0	8·2	11·7	10·9	9·0
,, born alive	117·5	117·5	123·5	141·4	142·6
,, dying, birth to weaning	3·3	11·5	8·7	11·7	7·9
Total number weaned	114·2	106·0	114·8	129·7	134·7
(C) Total Number of Lambs Born, *per* 100 *ewes lambing*	137·4	130·8	141·5	158·5	157·0
(D) *Per cent of total lambs born:*	%	%	%	%	%
Lambs born dead	6·4	6·5	8·7	7·2	5·9
Lambs dying, birth to weaning	2·6	9·1	6·4	7·7	5·2
Total deaths	9·0	15·6	15·1	14·9	11·1
Total weaned	91·0	84·4	84·9	85·1	88·9

(*a*) Excluding ewe lambs tupped.
(*b*) Ewe which, as far as is known, never carried a lamb.
(*c*) Born dead or dying within 48 hours.

in very good weather, and lambs born under good conditions and receiving a good supply of milk for the first week or so will survive any amount of rough weather later. In contrast, ewes in the other groups experienced indifferent to bad weather at lambing, and there were some very heavy losses of new-born lambs in a few flocks.

The markedly higher number of lambs reared per 100 ewes among the Clun and Kerry type flocks compared with the Dorset Horn and Down flocks of the Somerset groups is the outstanding feature of this analysis of lambing results. Among the Dorset Horn flocks, lambs weaned per 100 ewes put to ram generally fell within the range 106 to 116, with 131 weaned per 100 ewes as the best result recorded. For the Dorset Down flocks the general range was from 100 to 110, but five flocks recorded an average of fewer than 1 lamb weaned per ewe, and only one flock exceeded 130 lambs per 100 ewes tupped. Among the Herefordshire flocks the Clun and Clun type ewes averaged 135 lambs weaned, and the Kerries 132, compared with 121 lambs for flocks consisting mainly of pure- or cross-bred Oxford and Shropshire ewes. Four flocks averaged over 150 lambs, the best result being for a flock of Kerries with 205 lambs weaned from 125 ewes put to ram, an average of 164 lambs per 100 ewes.

Although the weather at lambing time was distinctly unfavourable, and heavy losses of lambs occurred on a few farms, the number of lambs reared in 1954–5 was generally reported to be not greatly different from the level regarded as normal by farmers concerned. Yet it is frequently suggested that a lowland flock on good land should be able to maintain a consistent average of not less than 150 lambs reared per 100 ewes put to ram. If this figure is a realistic one for the general run of commercial flocks, then there is something seriously wrong with the level of fertility or the standard of management, or both, of the Somerset flocks and, to a lesser degree, of those in Herefordshire as well, while the same consideration would also apply to most of the breeding flocks which have been the subject of investigation in other parts of the country in recent years. However, whether or not this figure of 150 lambs reared per 100 ewes is a realistic one there can be little doubt that lambing averages are low for the Dorset Down flocks, and that from the economic point of view this is a distinct disadvantage. The number of lambs produced by the Dorset Horn flocks is no higher, but for this specialised system of out-of-season lamb production a high proportion of twins may not necessarily be an advantage.

In view of the importance often attached to the practice of "flushing" breeding ewes as a means of increasing the number of lambs born, and of avoiding a protracted lambing period, an enquiry was made among all co-operating farmers regarding their own practice in this matter. Most farmers were agreed

as to the desirability of flushing, in the sense that it is something to be done if conditions are suitable, but their main problem was quite a different one, namely, that of preventing the ewes getting over fat between weaning and tupping. Some make an attempt to get the ewes down in condition by running them over bare stubbles after weaning, and then turning them into new leys or fresh aftermath. Some however, and particularly in the Ross and Hereford groups, held that the deliberate reduction in condition of the breeding flock is a bad policy, and in these cases no attempt is made to flush the ewes, while others prefer to reserve any new leys for the weaned lambs.

It may have been noted that the number of lambs weaned per 100 ewes shown in Table 4 does not agree exactly with the number reared per 100 ewes given in Table 3. In all cases but one, the number reared per 100 ewes is lower than the number weaned, due partly to the exclusion of ewe lambs tupped from the figures in Table 4, and partly also to the exclusion from this table of deaths of lambs between weaning and the end of the year. In the case of the S/Autumn group however the number of lambs weaned in Table 4 is lower than the number shown as reared in Table 3. This is due to the fact that one farm in this group took a second crop of lambs from a portion of the flock in the same year, and while the data for this second lambing is excluded from the figures in Table 4 they are, of necessity, included in the figures of Table 3.

This question of double cropping within the year, or of lambing three times within two years is receiving a considerable amount of attention at the moment with the discovery that hormone injection will enable ewes to breed out of season. If the experience of the owners of Dorset Horn flocks, which will breed twice a year without any artificial treatment, is relevant, then this development appears unlikely to make much headway in commercial practice. Few flock masters on lowland mixed farms are likely to welcome more than one lambing season in the twelve months, while another likely outcome of attempting to breed twice in the year is that within two or three years lambs will be arriving in every single month of the year. The one case of partial double cropping recorded among the Dorset Horn flocks represents however an interesting compromise. All ewes are lambed in the autumn and, shortly after lambing, ewes with their lambs at foot are turned in with the rams, and run with them until the end of November. As a result about one-third of the flock lambs down again in

TABLE 5

Disposal of Lambs: Per Cent of Total Numbers and Average Value per Head

	Somerset						Herefordshire			
	Autumn		Winter		Spring		Ross		Hereford	
	Per Cent	Per Head	Per Cent	Per Head	Per Cent	Per Head	Per Cent	Per Head	Per Cent	Per Head
	%	£	%	£	%	£	%	£	%	£
Lambs Sold:										
(*a*) Fat										
(1) Suck lambs	69·7	8·84	27·3	7·77	5·5	7·27	8·7	7·36	7·9	7·25
(2) Weaned lambs	2·1	6·76	5·8	6·92	10·3	6·55	23·4	6·86	8·8	6·72
Total Fat	71·8	8·79	33·1	7·62	15·8	6·83	32·1	7·00	16·7	6·98
(*b*) Store lambs	3·6	7·20	4·6	6·81	5·6	6·44	7·4	5·74	1·5	6·40
(*c*) Casualties	0·3	4·00	0·6	2·58	0·4	2·71	0·5	4·17	0·6	2·59
Total Sold	75·7	8·86	38·3	7·31	21·8	6·72	40·0	6·89	18·8	6·78
Lambs Retained	24·3	7·10	61·7	6·92	78·2	6·61	60·0	6·41	81·2	6·48
Total Lambs	100·0	8·43	100·0	7·07	100·0	6·63	100·0	6·60	100·0	6·54

March–April. Ewes which have not lambed in the spring are tupped to lamb at the normal time in the autumn, while those which lambed in the spring go to ram again rather later, to lamb in November: thus the whole flock lambs once per year and about a third of the flock lambs twice. The second lambing, which occurs at a busy time of the year in the spring, is restricted both in size and duration, while any ewe that lambs twice in a year is only called upon to lamb once in the following year.

(b) *Lambs: Average value per Head*

Table 5 sets out details of the disposal of the lamb crop and the average price realised per head; Table 6 gives the monthly distribution of sales of fat lambs, and Table 7 the average monthly dead-weight of fat lambs sold and the price per lb. and per head. Table E in the Appendix gives similar details, sub-divided into weight groups, for all Somerset flocks combined, and for all Herefordshire flocks. In all tables the values recorded for fat lambs include Deficiency Payments.

TABLE 6

Monthly Distribution of Fat Lamb Sales: Per Cent or Total Numbers Sold

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
	%	%	%	%	%
February	14·8	—	—	—	—
March	28·7	1·2	—	—	—
April	26·3	14·4	5·2	5·2	4·0
May	20·7	52·8	9·1	7·3	15·7
June	8·6	14·1	20·4	7·1	6·3
July	—	5·3	8·1	7·5	13·0
August	—	3·2	35·3	7·1	8·3
September	—	3·3	6·0	29·7	8·1
October	0·9	5·7	15·9	24·5	19·5
November	—	—	—	11·6	25·1
Total	100·0	100·0	100·0	100·0	100·0

Of total lambs produced in the S/Autumn group three-quarters were sold, and over 90 per cent of these sales were as suck lambs. The S/Winter group has the next highest proportion of lambs sold, 38 per cent, of which nearly three-quarters went as suck lambs: the proportion of total lambs sold was similar in the Ross group, but suck lambs in this

TABLE 7

Lambs sales. Average Estimated Dressed Carcase Weight per Head, Average Price per lb. E.d.c.w. and per Head. By Months

	Somerset									Herefordshire					
	Autumn			Winter			Spring			Ross			Hereford		
	E.d.c.w. per head	Average price		E.d.c.w. per head	Average price		E.d.c.w. per head	Average price		E.d.c.w. per head	Average price		E.d.c.w. per head	Average price	
		Per lb.	Per head		Per lb.	Per head		Per lb.	Per head		Per lb.	Per head		Per lb.	Per head
	lb.	d.	£	lb.	d.	£	lb.	d.	£	lb.	d.	£	lb.	d.	£
1955															
February .	46·7	48·0	9·34	—	—	—	—	—	—	—	—	—	—	—	—
March .	47·6	45·5	9·03	44·4	50·3	9·32	—	—	—	—	—	—	—	—	—
April .	45·2	47·0	8·87	40·0	50·5	8·42	34·5	53·2	7·66	34·3	54·8	7·83	39·5	50·8	8·36
May. .	47·4	44·0	8·68	40·2	46·9	7·87	38·7	48·7	7·84	37·1	50·7	7·84	36·2	49·4	7·44
June. .	45·0	38·7	7·25	41·5	38·3	6·63	38·3	43·2	6·90	39·3	42·4	6·95	40·9	39·3	6·71
July .	—	—	—	45·0	40·6	7·62	35·6	36·2	5·37	48·0	34·7	6·94	46·6	37·5	7·28
August .	—	—	—	46·0	35·0	6·71	40·8	37·3	6·34	49·5	32·9	6·78	42·9	37·3	6·67
September	—	—	—	45·2	34·4	6·49	49·5	36·4	7·51	51·3	32·4	6·92	52·9	31·7	6·98
October .	48·6	34·7	7·03	47·1	33·4	6·57	49·2	36·3	7·44	48·9	32·6	6·65	51·8	30·9	6·68
November	—	—	—	—	—	—	—	—	—	54·4	31·8	7·20	50·2	31·9	6·67
Total .	46·6	45·3	8·79	41·4	44·2	7·62	41·2	39·7	6·83	47·9	35·0	7·00	46·4	36·0	6·98

case account for less than one-quarter. In the S/Spring and Hereford groups only about one lamb in five was sold. Lambs retained are mostly kept back for winter feeding, but they include, especially in the S/Winter and S/Spring groups, ewe lambs run-on for flock replacement purposes.

The average weight of fat lambs sold was between 40 and 48 lb. dead-weight in all groups, with the second highest average weight recorded in the S/Autumn group where nearly all fat lambs are sold direct off the ewe. The Dorset Horn ewes maintained on farms in this group are capable of producing light-weight lambs for the Christmas market, but sales of lambs did not commence until February, and over half the total sales occurred from April onwards. Quite clearly there has been no attempt in this group to produce the light-weight lamb so frequently advocated, and the average dead-weight of lambs sold even in February was over 46 lb. per head, and in no month did the average weight fall below 45 lb. per head: indeed, out of season lambs sold in the S/Autumn group were considerably heavier than the early fat lambs sold from the S/Winter group. In the latter group a very few sales were made in March, but the bulk occurred in May at an average weight of 40 lb. per head.

The average price realised per head for all fat lambs sold is £8 16*s.* 0*d.* in the S/Autumn group, ranging from £9 7*s.* 0*d.* in February to £7 5*s.* 0*d.* per head in June; the next highest average price is £7 12*s.* 0*d.* in the S/Winter group, while in the remaining three groups the average price is around £7 per head. The average value for lambs retained was approximately £7 per head in the S/Autumn and Winter groups, where lambs are several months older, and between £6 8*s.* 0*d.* and £6 12*s.* 0*d.* per head in the remaining three groups. The average price of lambs retained in the S/Autumn group, most of which are nearly twelve months old at the end of the costing period, would have been considerably higher but for the fact that they included a considerable proportion of a second crop of lambs produced by one flock in the spring of 1955.

The average value of all lambs produced depends primarily upon the proportion of lambs sold fat, and upon the level of price realised, which itself depends largely upon how early in the year the sales are made, and especially upon the proportion of sales effected before June when the price per lb. fell sharply. Thus, in the S/Autumn group, where over 70 per cent of lambs produced are sold fat, and where over 90 per cent of fat lambs are on the market before the end of May,

the average value for all lambs, at £8 9*s*. 0*d*. per head, is much higher than in any other group. In the three spring-lambing groups, where the bulk of lambs are retained for winter feeding, the average value for all lambs produced is approximately £6 12*s*. 0*d*. per head. For the early lamb producers in the S/Winter group the average value for lambs is disappointing: too small a proportion of lambs are sold in April and May, and the average value of all lambs produced is only just over £7 per head, some 27*s*. lower than in the S/Autumn group and less than 10*s*. per head higher than in the spring-lambing groups.

The average value of lambs produced, per ewe, may be summarised as follows:

	S/Autumn	*S/Winter*	*S/Spring*	*Ross*	*Hereford*
No. of lambs reared per ewe (No.) .	1·18	1·06	1·12	1·27	1·32
Average value per lamb reared (£) .	8·43	7·07	6·63	6·60	6·54
Average value of lambs per ewe (£)	9·97	7·51	7·43	8·40	8·61

The highest value of lambs, nearly £10 per ewe, occurs in the S/Autumn group, followed by the two Herefordshire groups where the relatively greater number of lambs reared per ewe raises the value of lambs to around £8 10*s*. 0*d*. per ewe, a figure considerably higher than in the S/Spring group and approximately £1 per ewe higher than in the S/Winter group where the number of lambs born and reared per ewe is much lower.

(2) DEPRECIATION OF THE BREEDING FLOCK

Depreciation of the breeding flock as a whole is a net figure, being the depreciation of ewes and rams offset by the appreciation of the followers over the year.

(*a*) *Depreciation of Breeding Ewes*

The depreciation of a flock of breeding ewes cannot be directly determined from records covering only one year; it can, in fact, only be calculated retrospectively after a period of time sufficiently long to enable the final disposal value of all the animals in the flock to be known. For any shorter period indirect methods of assessment must be used, and the most appropriate procedure for a single year is that based upon the concept of Replacement Cost. This approach involves the determination of the total value of all ewes disposed of during the year, and of the cost of an equal number of

TABLE 8.

Net Depreciation of Breeding Flock. Averages per Ewe.

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
	£	£	£	£	£
Depreciation of Ewes . .	2·16	1·55	1·67	2·00	1·77
Depreciation of Rams . .	0·08	0·15	0·11	0·19	0·20
Total	2·24	1·70	1·78	2·19	1·97
Less Appreciation of Followers .	0·35	0·43	0·36	0·07	0·20
Net Depreciation of Breeding Flock	1·89	1·27	1·42	2·12	1·77

purchased ewes and/or home-bred ewe hoggs introduced into the flock to maintain total numbers of breeding ewes at a constant level. As, in practice, flock numbers are rarely maintained at precisely the same level from year to year adjustment must be made for any changes in numbers that occur, and also for any changes in quality that arise between one year and the next. In the case of a flock of ewes, changes in quality usually involve changes in the age distribution of the flock. After the two-tooth stage the value of a breeding ewe normally declines each year as her future productive life diminishes; a flock that contains a higher proportion of older ewes than formerly has thus experienced a diminution of its average quality and value, while the converse is the case where the proportion of older ewes has decreased.

Table 9 sets out the age distribution of the breeding ewes in each group at the beginning of the investigation, and their average values for the year: these values represent the mean market prices prevailing for each class of ewe at the beginning and end of the investigation.

Breeding from ewe lambs, as a matter of policy, is confined to a few farms, and lambs account for only a small proportion of the flock in all groups, although this proportion reached nearly 7 per cent of the total in the S/Winter group. Two- and four-tooth ewes combined account for about one-half of the breeding ewes in all except the Ross group, where the proportion is one-third, while full-mouth ewes in this group, and also in the S/Autumn group, account for more than one-third of the total, compared with a fifth to a quarter in the remaining groups. Market prices for the Dorset Horn ewes

TABLE 9

Age Distribution of Breeding Ewes and Average Value per Head

	Somerset						Herefordshire			
	Autumn		Winter		Spring		Ross		Hereford	
	Per Cent Nos.	Average per Head	Per Cent Nos.	Average per Head	Per Cent Nos.	Average per Head	Per Cent Nos.	Average per Head	Per Cent Nos.	Average per Head
	%	£	%	£	%	£	%	£	%	£
Breeding Ewes										
Lambs put to ram	1·2	9·50	6·7	8·00	3·8	8·00	1·3	7·70	2·4	7·60
Two-tooth ewes	24·2	12·00	19·4	10·40	28·6	9·85	11·8	9·30	14·7	9·50
Four-tooth ewes	22·9	11·00	29·4	9·35	23·0	9·20	22·9	10·20	31·6	9·10
Six-tooth ewes	15·7	9·45	26·4	8·05	20·9	8·30	27·1	8·20	25·5	8·25
Full-mouth ewes	36·0	9·15	18·1	7·55	23·7	7·40	36·9	7·30	25·8	6·90
Total	100·0	10·25	100·0	8·80	100·0	8·75	100·0	8·20	100·0	8·20

TABLE 10

Disposal of Breeding Ewes. Per Cent of Ewes in the Flocks at the Beginning of the Year and the Average Price Realised per Head

	Somerset						Herefordshire			
	Autumn		Winter		Spring		Ross		Hereford	
	Per Cent	Per Head	Per Cent	Per Head	Per Cent	Per Head	Per Cent	Per Head	Per Cent	Per Head
	%	£	%	£	%	£	%	£	%	£
Disposals:										
(1) Sales:										
(*a*) Draft ewes	17·5	7·40	12·1	7·17	7·7	7·20	9·0	7·56	5·6	6·68
(*b*) Culls (inc. casualties)	13·2	4·84	10·2	4·85	16·4	4·53	17·1	3·41	18·0	4·12
Total Sales	30·7	6·30	22·3	6·11	24·1	5·38	26·1	4·85	23·6	4·73
(2) Deaths	5·1	—	6·5	—	7·0	—	7·4	—	7·2	—
Total Disposals	35·8	5·41	28·8	4·73	31·1	4·17	33·5	3·77	30·8	3·62
Replacements: Average cost per head		11·26		10·07		9·54		8·93		8·80
Replacement Cost:										
(*a*) Per ewe replaced		5·85		5·34		5·37		5·16		5·18
(*b*) Per ewe in flock		2·09		1·54		1·67		1·73		1·60

in the S/Autumn group are markedly higher for all age groups, averaging over £10 per head for ewes of all ages compared with corresponding figures of between £8 4*s*. 0*d*. and £8 16*s*. 0*d*. in the other groups.

The data upon which the calculation of Flock Replacement Cost is based is set out in Table 10.

Total disposals of ewes, as a percentage of the total number of ewes in the flocks at the beginning of the year, ranged from 29 per cent in the S/Winter group to 36 per cent in the S/Autumn group, with the proportion replaced generally fairly closely related to the proportion of full-mouth ewes in the flocks at the beginning of the year.

The average price realised per ewe sold depends primarily upon the proportion of old but sound draft ewes sold for further breeding; these fetch around £6 10*s*. 0*d*. to £7 10*s*. 0*d*. per head compared with cull fat ewes which realised £3 to £5 per head. The proportion of draft ewes sold was highest in the S/Autumn and Winter groups, and exceeded the proportion of cull ewes sold in both groups: in the remaining three groups the proportion of cull ewes greatly exceeded that of draft ewes, and the average price realised by all ewes sold was appreciably lower. The average price per head realised by all ewes disposed of, including casualties and deaths, was £5 8*s*. 0*d*. for the S/Autumn group, £4 15*s*. 0*d*. for the S/Winter, £4 3*s*. 0*d*. for the S/Spring and £3 12*s*. 0*d*. to £3 15*s*. 0d, for the Ross and Hereford groups.

In replacement of the ewes disposed of from the flock during the year, purchased and/or home-bred ewes were introduced at an average cost of £11 5*s*. 0*d*. per head in the S/Autumn group, £10 in the S/Winter, £9 10*s*. 0*d*. in the S/Spring, and at just under £9 per head in the Ross and Hereford groups. Apart from a relatively few ewe lambs transferred to the breeding flock home-bred replacements take the form of two-tooth ewe hoggs, and these accounted for two-thirds or more of total replacements in the S/Winter and Spring groups, and for approximately one-half in the S/Autumn group, but for only one-quarter in the Hereford group, and one-sixth in the Ross group. Of the purchased replacements, nearly four-fifths of the total bought in the Ross and Hereford groups were two-tooth or four-tooth ewes, and the balance almost entirely six-tooth: in the Somerset groups young ewes, and especially two-tooth ewes, accounted for an even higher proportion of purchased replacements, but where older ewes were bought they were nearly always full-mouth ewes.

The average net cost of replacing each ewe disposed of during the year, measured by the difference between the average price per head realised by disposals and the average cost of ewes replacing them, varied between the groups only from £5 3*s*. 0*d*. to £5 17*s*. 0*d*. per ewe replaced, as those groups with higher disposal values per head also incurred higher costs per head for replacements. The average replacement cost for the flock however shows a greater variation between the groups, as this factor takes into account not only the net cost of replacing each ewe disposed of, but also the proportion of the flock replaced during the year. Flock replacement cost, calculated per ewe over the number of ewes in the flock at the beginning of the year, is highest, at over £2 per ewe, in the S/Autumn group, which combines the highest cost of replacement with the highest rate of flock turnover. The lowest cost, £1 11*s*. 0*d*. per ewe, occurs in the S/Winter group, which has the lowest rate of turnover, while the average cost in the remaining three groups is between £1 12*s*. 0*d*. and £1 15*s*. 0*d*. per ewe.

At this stage the calculation of flock replacement cost has proceeded upon the assumption that the average quality of the breeding ewes in each group remained unchanged at the end of the period, but this was not in fact the case in all groups, and this circumstance necessitates some adjustment to the figures arrived at above. In the S/Spring group the age distribution of the breeding flock was virtually identical at the beginning and end of the year, but in the two remaining Somerset groups there was a slight increase at the end of the year in the proportion of older and less valuable ewes, and a much more marked increase in the case of the Ross and Hereford groups. This increase in the proportion of less valuable ewes represents an element of deferred depreciation not covered by the assessment of replacement cost. Calculation of this element of deferred depreciation for each group yields the following results.

Average Cost per Ewe in Flock

	Deferred Depreciation	Replacement Cost	Total Depreciation of Ewes
Group	£	£	£
S/Autumn . .	0·07	2·09	2·16
S/Winter . .	0·01	1·54	1·55
S/Spring . .	—	1·67	1·67
Ross . . .	0·27	1·73	2·00
Hereford . .	0·17	1·60	1·77

Deferred depreciation of the breeding ewes is substantial only in the two Herefordshire groups, averaging over 5*s.* per ewe in the Ross group. Total depreciation of the ewe flock remains highest in the S/Autumn group at £2 3*s.* 0*d.* per ewe, and reaches £2 per ewe in the Ross group: in the remaining three groups the average cost is between £1 11*s.* 0*d.* and £1 15*s.* 0*d.* per ewe.

(*b*) *Depreciation of Stock Rams*

Turnover of rams during the year was highest in the S/Autumn group where 45 per cent of the number on hand at the beginning of the year had been sold or had died by the end of the period. Corresponding proportions for the other groups were 40 per cent in the Hereford group, 30 to 33 per cent in the two remaining Somerset groups, and 24 per cent in the Ross group. The high rate of turnover in the S/Autumn group is largely accounted for by the general policy in this group of selling off rams for further breeding after a relatively short period of service, while in the Hereford group a change of breeding policy on a number of farms led to the elimination of some still serviceable Oxford Down rams, and their replacement by rams of breeds judged more likely to produce lambs of a smaller and leaner type.

The average value of stock rams at the beginning of the year varied from £15 per head in the S/Spring group to £21 in the S/Winter group. The average value of rams sold during the year was £12 per head in the S/Autumn group, £8–£9 in the other two Somerset groups, but only £4 to £4 10*s.* 0*d.* per ram in the Ross and Hereford groups: the average price paid for rams bought to replace those discarded, or dying, was between £21 and £25 in all groups. The net loss incurred on each ram disposed of during the year averaged £14 to £17 in the Somerset groups, £19 in the Hereford, and £23 per ram in the Ross group which combined the highest cost per head for rams purchased and the lowest realisation price for discarded rams.

Depreciation of rams, calculated per ewe in flock, depends not only upon the proportion of rams disposed of during the year, and upon the net cost of replacing them, but is also considerably influenced by the number of ewes maintained per ram: this proportion was between 40 and 45 ewes per ram in the S/Spring and Hereford groups, 50 to 55 in the S/Winter and Ross groups and over 60 ewes per ram in the S/Autumn group. Depreciation of rams, per ewe in flock, is lowest at under 2*s.* per ewe in the S/Autumn group where a high rate of

turnover of rams is offset by a relatively high selling price for rams disposed of, and by a high proportion of ewes per ram; the heaviest depreciation cost, 4*s*. per ewe, is in the Hereford group, due mainly to a high rate of turnover of rams which, in this group, arose partly from non-recurrent causes associated with a change in breeding policy.

(*c*) *Appreciation of Followers*

For the ewe hoggs reared for flock replacement purposes the period of the investigation covers the twelve months prior to the time when they are drafted into the breeding flock and, during this period, they increase in value from that of a store lamb to that of a two-tooth ewe. The costs associated with this appreciation in value are represented by the foods and grazing consumed during the year and the labour costs etc., involved in shepherding: all the costs are included, along with those for ewes and rams, in the total costs of the breeding flock.

The average value of the followers as lambs at the beginning of the year varied between £7 10*s*. 0*d*. and £8 per head in all groups except the S/Autumn group, where the average was £9 8*s*. 0*d*. per head. The average value at the end of the year as two-tooth ewe hoggs was just short of £12 per head in the S/Autumn group and £9 10*s*. 0*d*. to £10 5*s*. 0*d*. in the remaining groups, giving an average increase in value over the year of approximately £2 10*s*. 0*d*. per head in the S/Autumn group, £2 8*s*. 0*d*. in the S/Winter, £2 6*s*. 0*d*. in the Hereford group, £2 in the S/Spring, and £1 14*s*. 0*d*. per head in the Ross group. It may be noted in passing that, on average, for every 100 ewe lambs retained for flock replacement purposes, between one and two lambs died during the year and eight to nine proved unsuitable for breeding: these culls realised however when sold only 12*s*. per head less than the market value of those transferred into the flock.

Appreciation of the followers, calculated per ewe in flock, varied from 7*s*. to 8*s*. 6*d*. per ewe in the Somerset groups where the number of followers carried per 100 ewes is higher, averaged 4*s*. per ewe in the Hereford group, but only 1*s*. 6*d*. in the Ross group, where not only is the proportion of followers very low, but where the average increase in value was the lowest of all groups.

The net cost of depreciation for the breeding flock as a whole, i.e. depreciation of ewes and rams less appreciation of followers, was highest at £2 2*s*. 6*d*. per ewe in the Ross group,

where a heavy depreciation on ewes and rams coincides with a very small appreciation for followers. In the S/Autumn group, where depreciation of the ewes is even greater, depreciation of rams is low and appreciation of followers relatively high, and net depreciation of the flock is just under £1 18*s.* 0*d.* per ewe. Corresponding figures for the remaining groups vary from £1 15*s.* 0*d.* per ewe for the Hereford group and £1 8*s.* 0*d.* for the S/Spring to £1 5*s.* 0*d.* per ewe for the S/Winter group, where depreciation of ewes is the lowest and appreciation of followers the highest of all groups.

(3) SALES OF WOOL

Sales of wool relate to wool shorn from ewes, rams, lambs and followers, and the total value of wool sold, calculated per ewe in flock, depends upon the number of sheep of each class shorn per ewe, the average weight of wool obtained per animal in each category, and the average price per lb. realised.

Table 11 gives details of numbers of sheep shorn per ewe, and the weight and value of wool per animal shorn. Adult sheep include ewes, rams and followers but, as ewe hoggs do not normally yield quite so much wool per head as breeding ewes, an adjustment has been made to the number of followers on this account; each ewe hogg has been taken as equivalent to 0·9 adult animals.

TABLE 11.

Average Number of Sheep Shorn per Ewe; Average Weight and Value of Wool per Animal Shorn

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
Number Shorn per Ewe:	No.	No.	No.	No.	No.
(1) Adult sheep . . .	1·05	1·15	1·11	0·93	1·07
(2) Lambs	0·35	0·85	1·03	1·14	1·12
Average Weight of Wool: *per animal shorn*	lb.	lb.	lb.	lb.	lb.
(1) Adult sheep . . .	5·32	5·40	5·17	5·58	5·34
(2) Lambs	2·66	1·88	1·66	1·75	1·61
Average Value of Wool: *per animal shorn*	£	£	£	£	£
(1) Adult sheep . . .	1·63	1·55	1·55	1·57	1·51
(2) Lambs	0·63	0·38	0·35	0·37	0·34

The average number of adult sheep shorn, calculated per ewe in flock, varies from 0·93 in the Ross group where very few followers are kept, and where the original number of

ewes had been reduced at shearing time by deaths and sales of cull ewes, to 1·15 per ewe in the S/Winter group. Lambs shorn per ewe varies from 0·35 in the S/Autumn group, where a high proportion of lambs are sold before shearing, to 1·14 lambs per ewe in the Ross group: lambs are shorn on all farms in the S/Autumn and Winter groups and on the great majority of farms in the remaining groups. There is no great difference between the groups in the average weight of wool shorn per head of adult animals, the variation being only from 5·17 lb. to 5·58 lb. per head: a similar consideration applies to the yield of lambs' wool obtained per lamb shorn, except that the yield is considerably higher in the S/Autumn group where the average age of lambs at shearing is about five months greater than for lambs in the spring-lambing groups.

The total weight of fleece wool, lambs' wool, locks, dag etc., sold per ewe, and the average value realised per lb. and per ewe are given in Table 12.

The overall value of wool per lb. depends upon the relative proportions of fleece wool to lambs' wool, the proportion of washed to greasy wool, and upon the grade of wool, which is primarily dependent upon the breed of sheep kept. With regard to the grade of wool it is impossible to do more than give a brief summary of the figures, and this is set out in Appendix Table F. It is interesting to note that for the seventy flocks included in this investigation, which cover a fairly restricted range of breeds of sheep, there were no fewer than thirty-five different grades of fleece wool recorded. Further, owing to the adverse effect of wet weather in the autumn and winter months the quality of wool was below normal in 1955, and, as a result, within each grade of wool there was a considerable range in the price received per lb. on account of varying deductions made for inferior quality. Also, in districts where some types of red sandstone are found, the fleeces of sheep folded on this soil-type acquire a stain which is not removed by washing, and this results in fairly heavy deductions from the maximum price for the grade. Further deductions arose from failure to remove completely soil and other extraneous matter during the washing process, a failure arising from the extremely wet and muddy conditions in the folds over long periods during the winter months which resulted in soil etc. becoming virtually cemented into the fleeces. The final outcome of the large number of grades of wool recorded, and the still larger number of different prices paid within

TABLE 12

Average Quantity of Wool Sold per Ewe; Average Value of Wool per lb. and per Ewe

Group	Fleece Wool			Lambs' Wool			Locks, Dag Etc.			All Wool		
	Weight of wool per ewe	Value of Wool		Weight of wool per ewe	Value of Wool		Weight of wool per ewe	Value of Wool		Weight of wool per ewe	Value of Wool	
		Per lb.	per ewe		Per lb.	per ewe		Per lb.	per ewe		Per lb.	per ewe
	lb.	d.	£	lb.	d.	£	lb.	d.	£	lb.	d.	£
Somerset												
Autumn .	5·57	73·4	1·70	0·93	56·5	0·22	0·15	27·6	0·02	6·65	70·0	1·94
Winter .	6·20	69·0	1·78	1·60	48·6	0·33	0·17	16·2	0·01	7·97	63·8	2·12
Spring. .	5·75	71·9	1·72	1·71	50·1	0·36	0·26	28·5	0·03	7·72	65·6	2·11
Herefordshire												
Ross .	5·19	67·4	1·46	1·99	50·8	0·42	0·14	35·5	0·02	7·32	62·3	1·90
Hereford .	5·71	67·7	1·61	1·80	50·7	0·38	0·16	26·1	0·02	7·68	62·8	2·01

TABLE 13

Analysis of Wool Sales: Proportion of Washed and Greasy Wool by Type of Wool

	S/Autumn		S/Winter		S/Spring		Ross		Hereford	
	% total weight	Average price per lb.	% total weight	Average price per lb.	% total weight	Average price per lb.	% total weight	Average price per lb.	% total weight	Average price per lb.
	%	d.	%	d.	%	d.	%	d.	%	d.
Fleece Wool										
Washed	82·3	73·5	47·1	75·0	65·3	73·4	51·2	71·5	57·4	70·5
Greasy	1·4	64·3	30·7	59·7	9·1	61·2	19·7	56·7	17·0	58·3
Total	83·7	73·4	77·8	69·0	74·4	71·9	70·9	67·4	74·4	67·7
Lambs' Wool										
Washed	11·7	57·9	8·5	51·5	17·1	51·1	13·5	53·3	13·6	52·7
Greasy	2·3	49·0	11·6	46·5	5·1	46·7	13·7	48·4	9·9	48·1
Total	14·0	56·5	20·1	48·6	22·2	50·1	27·2	50·8	23·5	50·7
Locks, dag etc.	2·3	27·6	2·1	16·2	3·4	28·5	1·9	35·5	2·1	26·1
Total Wool	100·0	70·0	100·0	63·8	100·0	65·6	100·0	62·3	100·0	62·8

grades, is a price structure for wool so complex as to defy analysis upon any but the broadest lines.

Table 13 sets out the proportions of washed and greasy wool sold in each group, sub-divided for fleece wool and lambs' wool, together with the average price per lb. received for each class of wool.

The relative quality of wool sold is best indicated by the average price per lb. received for washed fleece wool: this is highest for the S/Winter group at 75·0*d.* per lb. but there is little difference between the groups and the lowest figure, in the Hereford group, is 70·5*d.* per lb. There are, however, some fairly marked differences in the proportion of total fleece wool sold in the washed condition, ranging from over 98 per cent in the S/Autumn and 88 per cent in the S/Spring groups, to 72 to 77 per cent in the Ross and Hereford groups and 61 per cent in the S/Winter group. As a result, the average price for all fleece wool, washed and greasy, is highest in the S/Autumn group at 73·4*d.* per lb., with a range from 67·4*d.* to 71·9*d.* per lb. covering the remaining four groups.

The effect of these variations between the groups in the proportions of fleece wool to lambs' wool, washed to greasy, and in the varying grades of wool is, on balance, slight, as the net effect upon the average price per lb. is offset by differences between the groups in the weight of wool obtained per ewe; groups with a higher average price per lb. tend to have a lower average weight of wool per ewe. The overall value of wool sales per ewe is, in fact, highest in the S/Winter and S/Spring groups at just over 42*s.* per ewe, but the lowest value, in the Ross group, is 38*s.* per ewe.

With but little difference between the groups in the value of wool sales per ewe, differences in Total Production are largely determined by differences in the production of sheep i.e. the value of lambs produced, less depreciation of the breeding flock. Total production (Table 3) is thus highest in the S/Autumn group, due to the high prices received for out-of-season fat lambs. Next in order is the Hereford group, with the largest number of lambs reared per ewe: the almost equally good lamb crop in the Ross group is, however, offset by a high cost of flock depreciation, and total production in this group is lower than that in the S/Winter group, where the number of lambs reared per ewe is considerably lower, but where flock depreciation is also low. The S/Spring group has a level of total production slightly lower than in the Ross

group, due to a combination of a relatively low lambing average and a low value per head for lambs reared.

Apart from the S/Autumn group, which represents a somewhat unique system of sheep management, and in which total production slightly exceeded £10 per ewe, there is little difference between the remaining groups, the variation being only from £8 2*s*. 0*d*. in the S/Spring group to £8 17*s*. 0*d*. per ewe in the Hereford group.

PRODUCTION COSTS

(1) FOODS AND GRAZING

In Table 14 the average cost per ewe for the various classes of foods consumed by ewes, rams, lambs and followers is set out, and Table 15 gives the acreage of folded roots and green fodder consumed per 100 ewes, and the weight of hand-fed foods per ewe.

TABLE 14.

Cost of Foods and Grazing. Average Cost per Ewe

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
	£	£	£	£	£
A. Foods:					
(1) Folded Roots	2·12	1·37	1·09	0·56	0·25
(2) Hand-fed Foods:					
(*a*) Purchased	1·01	0·37	0·10	0·14	0·13
(*b*) Home-grown:					
Corn	0·39	0·27	0·19	0·30	0·35
Hay	·14	·15	·08	·16	·38
Roots and Green fodder	·35	·41	·18	·21	·53
Other	—	·07	·03	·02	·01
Total Home-grown	0·88	0·90	0·48	0·69	1·27
Total Hand-fed Foods	1·89	1·27	0·58	0·83	1·40
Total Foods	4·01	2·64	1·67	1·39	1·65
B. Grazing	1·04	1·38	1·60	1·48	1·78
Total Foods and Grazing	5·05	4·02	3·27	2·87	3·43

(*a*) *Total Foods*

The outstanding feature of Table 14 is the very high cost of total foods for the S/Autumn group. In this group the production of out-of-season fat lamb requires that the ewes shall milk, and lambs grow and fatten throughout the winter months,

TABLE 15

Average Acreage of Folded Roots Consumed per 100 Ewes and Quantities of Hand-fed Foods per Ewe.

	Somerset						Herefordshire			
	Autumn		Winter		Spring		Ross		Hereford	
Folded Roots and Green Fodder	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
(*a*) Main crop	7·64	47	4·71	40	5·31	71	1·75	36	1·15	64
(*b*) Catch crop	6·72	42	4·96	42	2·14	29	0·32	7	0·46	26
(*c*) Sugar Beet Tops	1·78	11	2·12	18	—	—	2·79	57	0·18	10
Total	16·14	100	11·79	100	7·45	100	4·86	100	1·79	100
Average cost per acre	£ 13·1		£ 11·6		£ 14·6		£ 11·5		£ 14·0	
Hand-fed Foods										
(*a*) Purchased Concentrates	84 lb.		25 lb.		5 lb.		13 lb.		12 lb.	
(*b*) Home-grown corn	54 „		37 „		26 „		42 „		46 „	
Concentrates and corn	138 „		62 „		31 „		55 „		58 „	
(*c*) Hay	76 „		61 „		32 „		65 „		151 „	
(*d*) Roots and green fodder	4·9 cwt.		5·9 cwt.		2·5 cwt.		2·7 cwt.		6·8 cwt.	

and this is clearly expensive in food costs, especially for folded root and green fodder crops and for purchased concentrates: folded roots consumed averaged over 16 acres per 100 ewes, while ¾ cwt. of purchased concentrates and nearly ½ cwt. of home-grown corn were fed per ewe.

In the S/Winter group, where lambing takes place in December–January and a fair proportion of early fat lambs is produced, total food costs, although well below the level reached in the S/Autumn group, are considerably higher than in the spring-lambing groups, especially in relation to folded roots and purchased concentrates. Among the spring-lambing groups total food costs are lowest in the Ross group, and, although total costs are similar in the S/Spring and Hereford groups, there is a marked difference between the groups in feeding practice. Ewes in the S/Spring group rely mainly upon folded roots for winter keep, and consumed on average over 7 acres per 100 ewes: in the Hereford group, where folding of breeding ewes is infrequently practised owing to the heavy nature of the soil, less than 2 acres per 100 ewes were consumed, but large quantities of hay—over 150 lb. per ewe—and of hand-fed roots, were fed.

(b) Grazing Cost

Full details of the average costs per acre for Pasture, and for Mowing land, together with the cost of Ley Establishment are given in Appendix Tables G and H, while a summary of grazing costs are given in Table 16.

The general pattern of relative grassland costs is similar for all types of grassland, whether Mowing land, Pasture land or total grassland: total costs are highest in the S/Autumn group, with the S/Winter group holding an intermediate position, and with costs in the remaining three groups at a somewhat lower level.

The main differences between the groups lie in the relative cost of ley establishment and, to a somewhat lesser degree, in the cost of manures applied to grassland, and in rental values. In the S/Autumn group nearly one-quarter of the total grassland area of the farm is in maiden leys, and, although a high proportion of these are one- or two-year leys, the average cost of ley establishment per acre of total grassland is approximately 23*s.* in this group compared with 9*s.* to 15*s.* per acre in the remaining groups.

The cost per acre of grazing, which is obtained by adjusting the cost of pasture land to allow for the value of aftermath

TABLE 16.

Grazing Costs. Average Cost per Acre of Ley Establishment Mowing Land, Pasture, and Total Grassland

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
	%	%	%	%	%
Maiden leys as per cent of total grassland area: . . .	24·8	12·2	10·2	18·4	14·3
Per Cent of Leys Established					
(*a*) 1–2 year leys . . .	74·5	42·8	26·8	48·2	61·7
(*b*) Longer leys . . .	25·5	57·2	73·2	51·8	38·3
Total leys . . .	100·0	100·0	100·0	100·0	100·0
(*a*) Undersown . . .	80·0	69·3	86·7	93·7	96·7
(*b*) Direct seeded . . .	20·0	30·7	13·3	6·3	3·3
Total leys . . .	100·0	100·0	100·0	100·0	100·0
Ley Establishment					
Average cost per acre . .	£	£	£	£	£
(*a*) Undersown . . .	3·35	3·75	3·91	3·78	3·34
(*b*) Direct seeded . . .	9·64	7·97	7·98	10·63	8·49
Total leys . . .	4·60	5·05	4·45	4·21	3·52
Cost of Ley Establishment per acre of total grassland . .	1·14	0·60	0·45	0·76	0·50
Average Cost per Acre:					
(1) Mowing Land . . .	6·43	5·88	5·17	5·19	5·19
(2) Pasture Land . . .	4·89	4·48	3·50	3·83	3·44
(3) Total Grassland:					
(*a*) Labour and Power . .	0·28	0·31	0·27	0·32	0·23
(*b*) Net cost of Manures .	1·00	·86	·78	·64	·63
(*c*) Field Costs . . .	2·85	2·96	2·24	2·22	2·34
(*d*) Ley Establishment .	1·14	·60	·45	·76	·50
(*e*) Miscellaneous costs. .	·35	·32	·33	·37	·37
Total Costs . . .	5·62	5·05	4·07	4·31	4·07
(4) Grazing	5·33	4·89	3·92	4·11	3·79
Stock Unit* Weeks per acre of Grazing	No. 34·9	No. 31·8	No. 26·7	No. 29·9	No. 28·1
Average cost per Stock Unit Week	s. d. 3 1	s. d. 3 1	s. d. 2 11	s. d. 2 9	s. d. 2 8
Stock Unit Weeks per Ewe .	No. 6·8	No. 9·0	No. 10·9	No. 10·8	No. 13·2
Average cost of grazing per ewe.	£ 1·04	£ 1·38	£ 1·60	£ 1·48	£ 1·78

* Cow equivalent.

grazing on the mowing land, follows the general pattern noted for total grassland. The average cost, at well over £5 per acre, is highest in the S/Autumn group, followed by the S/Winter group at just under £5 per acre, but is at a distinctly lower level for the remaining groups. The cost of grazing per stock-week however, depends upon the cost of grazing per acre related to the density of stocking of the grassland: this is also highest in the S/Autumn group at nearly 35 stock-weeks per acre, is lowest on the larger and more extensively managed farms in the S/Spring group at less than 27 per acre, and ranges from 28 to 32 stock-weeks per acre in the remaining groups. The higher cost of grazing per acre in the S/Autumn group is partially offset by the greater density of stocking, and the average cost of grazing per stock-week, i.e. the average cost over the year of keeping the equivalent of one adult beast at grass for one week, is 3/1 in this group and also in the S/Winter group, compared with 2/8 to 2/11 per stock-week in the remaining groups.

The cost of grazing per ewe depends upon the average cost per stock-week and the number of stock-weeks grazed per ewe during the year; the latter is determined by the number of lambs and followers carried per ewe, and the proportion of the year during which sheep are running the grassland. In the S/Autumn group, where the flock spends a prolonged period folded over arable crops, and where most of the lambs have been sold before the flock goes onto grassland, less than 7 stock-weeks per ewe are recorded, to give the lowest cost of grazing per ewe for any group. At the other extreme, in the Hereford group, where the flock is on grassland the whole year except for a short period during the winter, the number of stock-weeks at grass averaged over 13 per ewe, and results in the highest cost of grazing per ewe, despite the fact that this group has the lowest cost per stock-week of all groups.

(*c*) *Total Foods and Grazing*

The relatively low cost of grazing in the S/Autumn group does not go far in offsetting the very high cost of folded roots and purchased concentrates, and total foods and grazing exceed £5 per ewe in this group compared with just over £4 in the S/Autumn group, and from £2 15*s.* 0*d.* to £3 9*s.* 0*d.* per ewe in the remaining groups. Compared with the Ross and Hereford groups the advantage of the higher level of total production in the S/Autumn group has been more than lost in the additional cost of foods and grazing involved: total

foods and grazing account for over 50 per cent of total production in the S/Autumn group, 48 per cent in the S/Winter, but for only 35 to 40 per cent in the three spring-lambing groups.

(2) LABOUR COSTS

Manual labour requirements are set out on a monthly basis in Table 17.

In the spring-lambing groups, where the system of sheep management is orthodox, more than 50 per cent of total annual labour requirements fall in the summer six months (April–September), but in the winter-lambing group nearly 55 per cent fall in the winter period, while the proportion is over 60 per cent in the S/Autumn group. The actual number of man-hours required per 100 ewes is lower however, both in summer and in winter, in the spring-lambing groups. In these groups labour requirements are at a low level during the months of October to December after the ewes have settled to the ram and before winter feeding has begun on any scale; at this period one hour per day, or less, per 100 ewes suffices, but this increases to 1½ hours in January as folding and hand feeding increases, and shows a further sharp increase in February–March to an average of 3 to 4 hours per day per 100 ewes during this period when the bulk of the lambs are dropped. During April, labour requirements remain at a fairly high level—2 to 2½ hours per day—fall slightly in May, but rise to a new peak in June owing to the heavy call on labour for shearing: in two cases in the Ross group and one in the Hereford group however, shearing was brought forward to the end of May with the object of clearing the way for beet hoeing in June. Routine labour requirements fall off again in July, and are maintained through August and September at about 1¼ to 1½ hours per 100 ewes per day.

In the S/Winter group labour hours increase month by month from October to December as winter feeding increases, and rise to an average of nearly 5 hours per day per 100 ewes in January when the main lambing period is reached. Routine labour remains at a high level—3 to 3½ hours per day—in February and March when folding and hand feeding are at their peak: thereafter labour needs fall steadily from April to September, broken only by shearing in June, but do not fall below 1½ hours per day per 100 ewes in any month. In the S/Autumn group lambing takes place on grass in September–October, and shortly afterwards folding commences, and

TABLE 17

Manual Labour. Man Hours per 100 Ewes; by Months, and as a Percentage of Total Annual Man Hours

	Somerset						Herefordshire			
	Autumn		Winter		Spring		Ross		Hereford	
	Per 100 Ewes	Per Cent	Per 100 Ewes	Per Cent	Per 100 Ewes	Per Cent	Per 100 Ewes	Per Cent	Per 100 Ewes	Per Cent
	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%
October	108	9·9	43	4·5	26	3·7	25	3·8	14	1·8
November	108	9·9	56	5·8	28	3·8	19	2·8	23	3·1
December	107	9·8	81	8·5	33	4·5	27	4·0	31	4·2
January	117	10·7	144	15·0	48	6·6	48	7·1	47	6·4
February	109	10·0	97	10·1	114	15·6	87	12·9	69	9·4
March	115	10·5	104	10·9	107	14·8	115	17·1	153	20·8
Winter	664	60·8	525	54·8	356	49·0	321	47·7	337	45·7
April	85	7·7	81	8·5	69	9·5	64	9·4	77	10·5
May	72	6·6	75	7·8	58	7·9	53	7·9	66	8·9
June	108	9·9	117	12·2	107	14·8	106	15·7	122	16·6
July	62	5·6	60	6·2	53	7·2	50	7·5	54	7·3
August	51	4·7	53	5·5	42	5·8	40	5·9	40	5·4
September	51	4·7	48	5·0	42	5·8	40	5·9	41	5·6
Summer	429	39·2	434	45·2	371	51·0	353	52·3	400	54·3
Year	1,093	100·0	959	100·0	727	100·0	674	100·0	737	100·0

proceeds right through the winter months. Monthly labour requirements are remarkably constant in this group between October and March at $3\frac{1}{2}$ to 4 hours per day per 100 ewes. Work on sheep falls off in April and again in May, but even in May the average is still nearly $2\frac{1}{2}$ hours per day: following the normal peak in June there is a further fall in July and August, but at no time during the summer months does the labour requirement fall below about $1\frac{3}{4}$ hours per day per 100 ewes.

TABLE 18.

Labour and Power: Average Costs per Ewe

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
Average Cost per Ewe	£	£	£	£	£
Labour and Power					
(*a*) Manual labour	1·77	1·52	1·26	1·10	1·21
(*b*) Contract work	·01	·03	·01	·01	·06
(*c*) Tractor	·06	·13	·05	·03	·09
(*d*) Lorry/Car	·02	·02	·01	—	—
(*e*) Horse	·08	·01	—	·02	·01
Total Labour and Power	1·94	1·71	1·33	1·16	1·37
Hours per Ewe	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.
(*a*) Manual labour	10·93	9·59	7·27	6·74	7·37
(*b*) Tractor	0·29	0·70	0·25	0·18	0·48

The cost of manual labour in the S/Autumn group averages 35*s*. per ewe, 30*s*. in the S/Winter group and from 22*s*. to 25*s*. per ewe in the spring-lambing groups. Contract work is of small importance, on average, in all groups, and relates mainly to contract shearing which was employed on three farms in each of the S/Autumn, S/Winter and Hereford groups, and on one farm in each of the S/Spring and Ross groups. In a few cases castration and tailing were also done by contract, and in one case the periodic trimming of the sheeps' feet was undertaken on the same basis.

Tractors and horses directly engaged in shepherding are concerned mainly in carting roots, hurdles, netting, feeding troughs etc. while lorries and cars are used on some farms to visit the flock on outlying parts of the farm, and to transport hay, corn etc. The total cost of all these forms of power is slight, ranging from just over 3*s*. per ewe in the two early lambing groups to 1*s*. per ewe in the Ross group.

Total labour and power costs are highest in the S/Autumn group at just under £2 per ewe, due mainly to the extended period of folding in this group; the average cost in the S/Winter group is 34*s.* per ewe, and ranges from 23*s.* to 27*s.* per ewe in the other three groups.

(3) MISCELLANEOUS COSTS*

Miscellaneous Costs. Average per Ewe

	S/Autumn	S/Winter	S/Spring	Ross	Hereford
	£	£	£	£	£
Marketing Costs	0·20	0·09	0·05	0·10	0·07
Other Miscellaneous . .	·40	·40	·29	·43	·38
Total Miscellaneous . .	0·60	0·49	0·34	0·53	0·45

Marketing costs include transport of sheep to or from market, Fatstock Marketing Corporation charges, auctioneers' commission, market tolls etc. The level of marketing costs depends upon the proportion of the lamb crop sold during the year, and is therefore high in the S/Autumn group, and in the transport cost involved in moving purchased rams and ewe replacements on to the farm, a factor which is mainly responsible for a higher cost in the Ross and Hereford groups than in the S/Spring group.

Other miscellaneous costs cover such items as depreciation of, and repairs to, sheep equipment, veterinary fees, drenches, vaccines, sera, dips, sprays, disinfectant, marking fluid, fuel for shearing, wool cord etc. etc.

Total Miscellaneous Costs are also highest in the S/Autumn group at 12*s.* per ewe, and lowest in the S/Spring group at 7*s.* per ewe.

ACREAGE DEVOTED TO SHEEP

The composition of the area of the farm devoted to the breeding flock is detailed in Table 19.

Each 100 ewes (together with rams, lambs and followers) require, on average, just over 51 actual† acres in the S/Autumn

* A detailed analysis of Miscellaneous Costs for the sheep enterprise as a whole is shown in Appendix Table M.

† For definition of "Actual" and "Annual' acres, see pages 140 and 141.

TABLE 19

Actual and Annual Acres Devoted to the Breeding Flock: Average per 100 Ewes and Per Cent of Total

	Somerset						Herefordshire			
	Autumn		Winter		Spring		Ross		Hereford	
Sheep Acres. Average per 100 ewes	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
A. *Actual Acres*										
(1) Folded Roots and Green fodder:										
(*a*) Main Crop	7·64	15·0	4·71	8·6	5·31	8·3	1·75	2·9	1·15	1·6
(*b*) Catch crop	6·72	13·1	4·95	9·0	2·14	3·3	·32	·5	·46	·6
(*c*) Sugar Beet tops	1·79	3·5	2·12	3·8	—	—	2·79	4·5	·19	·3
Total	16·15	31·6	11·78	21·4	7·45	11·6	4·86	7·9	1·80	2·5
(2) Home-grown Hand-fed foods:										
(*a*) Corn, peas and beans	1·91	3·7	1·18	2·1	1·04	1·6	1·60	2·6	1·74	2·4
(*b*) Hay	1·57	3·1	1·59	2·9	1·02	1·6	1·88	3·1	4·03	5·7
(*c*) Roots and Green fodder	·90	1·8	1·21	2·2	·56	·9	·47	·8	1·27	1·8
Total	4·38	8·6	3·98	7·2	2·62	4·1	3·95	6·5	7·04	9·9
Total Foods	20·53	40·2	15·76	28·6	10·07	15·7	8·81	14·4	8·84	12·4
(3) Grassland	30·53	59·8	39·24	71·4	54·01	84·3	52·33	85·6	62·44	87·6
Total Actual Acres	51·06	100·0	55·00	100·0	64·08	100·0	61·14	100·0	71·28	100·0
Index: S/Autumn group = 100	100		108		126		120		140	
B. *Annual Acres*										
(1) Folded Roots and Green fodder	11·65	32·4	7·94	19·8	6·38	12·7	2·92	7·0	1·45	2·7
(2) Home-grown Hand-fed foods	3·24	9·0	2·84	7·1	1·92	3·8	2·75	6·5	4·81	9·0
Total Foods	14·89	41·4	10·78	26·9	8·30	16·5	5·67	13·5	6·26	11·7
(3) Grassland	21·05	58·6	29·39	73·1	42·10	83·5	36·25	86·5	46·97	88·3
Total Annual Acres	35·94	100·0	40·17	100·0	50·40	100·0	41·92	100·0	53·23	100·0
Index: S/Autumn group = 100	100		112		140		117		148	

group, 55 in the S/Winter, 64 in the S/Spring, 61 in the Ross and 71 actual acres per 100 ewes in the Hereford group. After adjustment to allow for the fact that catch crops, hay, aftermath grazing etc. absorb only part of the total annual production of the area of land they occupy, total annual acres utilised by the flock are calculated at 36 per 100 ewes in the S/Autumn group, 40 in the S/Winter, 50 in the S/Spring, 42 in the Ross and 53 annual acres per 100 ewes in the Hereford group.

It will be recalled that the number of followers carried per ewe varies between the groups, and the acreage requirements per ewe, which includes that of the followers, will vary on that account. If however the number of followers carried are adjusted on an ewe-equivalent basis, while a similar adjustment is made for the varying number of lambs reared in the groups, and the acreage requirement calculated per head over the total number of ewe equivalents arrived at, then it is found that the annual acres per ewe equivalent for the five groups remains in the same order as previously, and in only slightly altered proportions, indicating that the main differences between the groups arise from differences in systems of management, and especially of differences in feeding practice.

Arable root and green fodder crops provide a considerably greater quantity of sheep keep per acre than grassland, and the annual acreage required per 100 ewes tends to vary inversely with the proportion of folded roots provided, and directly with the proportion of grassland: the S/Autumn group with 32 per cent of total annual acres provided by folded arable crops and 59 per cent by grassland requires only 36 annual acres per 100 ewes, while the Hereford group with 88 per cent of grassland and less than 3 per cent of folded crops requires 53 annual acres per 100 ewes.

Although the area of land required to maintain a given number of sheep decreases as the proportion of folded arable crops increases, the cost per acre is much higher for crops of this type than it is for grassland, and the overall cost of foods and grazing per annual acre rises with increasing proportion of folded arable crops; total foods and grazing cost average over £14 per annual acre in the S/Autumn group where folded crops account for 32 per cent of the total annual acreage, £10 per acre in the S/Winter group with 20 per cent of folded crops, but only £6 per acre in the Hereford group where less than 3 per cent of total annual acres are represented by folded crops. Increased reliance upon folded root crops thus reduces the acreage requirements per ewe but increases the cost per

acre: which of these two opposed factors exerts most influence upon the overall results is indicated in Table 20 below.

TABLE 20.

Margin per Ewe and per Annual Acre. Production Costs per £100 of Total Production

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
Margin per Ewe . (£)	2·43	2·14	3·18	3·62	3·60
Annual Acres per Ewe .(Ac.)	0·36	0·40	0·50	0·42	0·53
Margin per Annual Acre .(£)	6·76	5·33	6·31	8·64	6·76
Per £100 of Total Production	£	£	£	£	£
(1) Total cost of Foods and Grazing . . .	50·4	48·1	40·3	35·1	38·8
(2) Total cost of Manual Labour	17·8	18·5	15·6	13·6	14·4
(3) Total Production Costs .	75·7	74·4	60·8	55·7	59·3
Total Production per £100 Valuation of Ewes, Rams and Followers	82·3	80·2	77·8	88·5	91·8

It has been shown earlier in this report that the advantage enjoyed by the S/Autumn group in the high level of production per ewe arising from the sale of out-of-season fat lamb is more than counterbalanced by the high costs for winter foods and for labour required to produce fat lambs at this time of year, and the margin per ewe resulting from this type of production is considerably lower than for more orthodox systems of sheep management. The margin per ewe in the S/Winter group is even less favourable, as the extra food and labour costs involved in winter feeding for the production of early fat lamb do not appear to be accompanied by any commensurate increase in production. However, when the lower acreage requirement in the S/Autumn group is taken into account the relative position is substantially modified. The highest margin per annual acre is in the Ross group where costs, and particularly food costs, have been kept low, but the second highest margin is shared by the intensively managed S/Autumn group and the Hereford group, where very little folding on arable crops is undertaken. The least satisfactory result still obtains in the S/Winter group, but the difference between this group and the remaining groups is smaller on a per acre basis than it is on a per ewe basis.

SOME MANAGEMENT ASPECTS OF PROFITABILITY

In an attempt to examine the management aspects of the reasons for high and low profitability, average results have

been calculated for some of the flocks with the highest and the lowest margins per acre. A valid comparison can only be made for flocks in which the overall general pattern of management is similar, and for this reason the analysis is restricted to the three spring-lambing groups, in each of which the main objective is the production of store lambs for winter feeding, while the effect of method of flock replacement upon overall results has been eliminated by confining the analysis still further to flocks in which replacements are purchased. There are thirty-one of these Flying Flocks in the three groups combined, and results for the eight flocks with the highest and the eight with the lowest margin per acre are given in Table 21.

TABLE 21

Average Results for Eight Flocks with Best and Worst Margin per Acre. Flying Flocks in S/Spring, Ross and Hereford Groups

Averages per Ewe	Eight Best Flocks	Eight Worst Flocks
PRODUCTION	£	£
Value of lambs produced	9·12	7·32
Less Depreciation of Ewes	1·55	2·17
Production of Sheep	7·57	5·15
Sales of wool. Ewes and lambs	1·87	1·73
Total Production	9·44	6·88
PRODUCTION COSTS:		
(1) Foods and Grazing:		
(*a*) Folded, Roots etc.	0·29	0·57
(*b*) Hand-fed Foods	·80	1·29
(*c*) Grazing	1·56	1·60
Total	2·65	3·46
(2) Labour and Power	1·12	1·31
(3) Miscellaneous Costs	0·48	0·46
Total Production Costs	4·25	5·23
Margin: Surplus	5·19	1·65
	No.	No.
Number of Lambs reared per Ewe	1·33	1·16
	Ac.	Ac.
Annual Sheep Acres per Ewe	0·37	0·49
Average per Annual Sheep Acre:	£	£
Total Production	25·67	13·98
Total Production Costs	11·56	10·62
Margin: Surplus	14·11	3·36

The level of margin per acre is determined by the margin per ewe and the acreage utilised per ewe, and the higher margin per ewe in the Best group accounts for more than three-quarters of the higher margin per acre in this group. On the cost side the main difference between the groups lies in the cost of total foods and grazing, and especially of folded roots and hand-fed foods. There is, in fact, little difference in the relative acreages of folded crops, hand-fed foods and grazing but, whereas nearly all folded roots in the Worst group are main crop roots costing nearly £20 per acre to produce, in the Best group over 70 per cent are either beet tops or catch crop roots and green fodders, with an average cost of just over £10 per acre. Hay fed to the breeding flock averaged just under 1 cwt. per ewe in both groups, but corn and purchased concentrates combined averaged slightly over ½ cwt. per ewe in the Worst group compared with ¼ cwt. in the Best, and the quantity of hand-fed roots fed was also rather lower in the latter group.

The cost of grazing per ewe is similar in both groups; the cost of grazing per acre in the Best group is 20*s.* higher, but the intensity of stocking in this group is 40 per cent greater, and the average cost per stock-week lower. Both the relatively low cost of foods and grazing, and the smaller acreage utilised by sheep in the Best group arise primarily from a greater reliance upon beet tops and catch crops for folding rather than upon main crop roots, and from a considerably more intensive use of grassland in this group.

However, although there are substantial gains to be had from economies in feeding, the main factor determining margin per ewe is to be found on the side of production rather than of costs: the margin per ewe is £3 11*s.* 0*d.* greater in the Best group, and over 70 per cent of this difference arises from the higher level of production in this group. Total production is £2 11*s.* 0*d.* greater in the Best group and, of this, the higher value of lambs produced accounts for £1 16*s.* 0*d.* per ewe, the lower depreciation of ewes for 12*s.* and higher sales of wool for 3*s.* per ewe.

The higher value of lambs produced per ewe in the Best group results equally from a larger number of lambs produced per ewe and a higher average value per lamb: a small proportion of lambs were sold off grass in both groups, and those from the Best group realised an average of £7 5*s.* 0*d.* per head, nearly £1 per head more than in the Worst group, while lambs retained in the former group had an average market value 10*s.* per head greater than in the latter.

The lower level of flock depreciation in the Best group is almost entirely due to a lower rate of flock turnover; the average loss on each ewe replaced is almost identical in the two groups. In the Best group the average age of breeding ewes is greater than in the Worst group, and there is a considerably smaller proportion of two-tooth ewes, a fact which will account, in part at least, for the higher proportion of twins reared in the Best group. The bulk of flock replacements purchased in the Best group are four-tooth or older, and all ewes are kept until no longer fit for breeding, realising, on culling, just under £4 per head. In the Worst group, where the average age of flocks is lower, and where most replacements are bought as two-tooths, the rate of flock turnover should normally be less than for the Best group where the average age of ewes is higher. That this is not in fact the case arises from two factors: the death rate among breeding ewes was slightly higher in the Worst group, but the main reason is found in the practice on some of the farms in this group of drafting full-mouth ewes for further breeding. An average price of approximately £6 per head was realised for these draft ewes compared with just under £4 for cull ewes, but the evidence of this analysis is that the increase in the rate of turnover that results from this practice, together with the higher price paid for replacements when young ewes are bought more than offsets the extra price received from the draft ewes.

The importance of a high lambing percentage upon the margin per acre is seen when the results for the thirty-one flying flocks included in the three spring-lambing groups are analysed according to the number of lambs reared per ewe.

Number of lambs reared per 100 ewes

	Less than 115	116 to 135	136 and over
Number of flocks . . .	10	11	10
Average number of lambs reared per 100 ewes . . . (No.)	107	127	143
Average margin per acre . (£)	6·59	8·73	9·38

Clearly, the highest level of margin per acre will not be attained without a high lambing percentage, but the achievement of a high lambing percentage is, in itself, no royal road to success. Of the sixteen flocks in the Best and Worst groups

combined the flock with the third highest number of lambs reared per 100 ewes had one of the lowest margins per acre, while four flocks in the Worst group had a larger number of lambs reared per 100 ewes than the flock with the second highest margin per acre in the Best group. Also, four flocks with 140 or more lambs reared per 100 ewes, i.e. a higher lambing percentage than all but two of the flocks in the Best group, failed to find a place in that group. Although the number of lambs reared per 100 ewes is undoubtedly one of the most important factors determining the level of margin per acre, it is only one of a number of important factors, and the highest level of margin will only be attained where a high lambing average combines with a high value per head for the lambs reared, with a relatively low cost for flock depreciation, and with economy in the type and quantity of foods fed. The results of this investigation suggest that, provided the standard of management is good enough, there is no incompatability among these objectives, at least, not within the range of 100–150 lambs reared per 100 ewes.

Breed and strain of sheep will largely determine the number of lambs born, and the mothering capabilities of the ewes, allied to an adequate supply of foods during the suckling period, will exert an important effect upon the rate of growth and eventual value of the lambs reared, although the effect of the breed of ram used upon the value and growth rate of the lambs must not be overlooked. Economy in food costs is achieved by relying as much as possible upon grazing, and upon beet tops and catch crops, rather than upon main-crop roots for any folding that may be necessary: for flying flocks it also appears that the policy of buying older ewes i.e. four-tooth and upwards, and breeding from them as long as they remain sound in udder, mouth, and feet, will result in a lower cost for flock depreciation than the alternative of buying young ewes and drafting them for further breeding at the full-mouth stage. And, overlying these factors and transcending them all in importance is the overriding need for skilful management and shepherding of the flock. Success or failure in sheep management, as in all branches of agricultural production, may lie not so much in the adoption of a correct policy, but in the ability to carry out the policy in such a manner as to bring it to a successful conclusion; competence in this sense is largely a matter of experience and the personal attributes of the manager, and these are not open to direct economic analysis.

METHODS OF FLOCK REPLACEMENT

Even within a sample of only seventy flocks a very wide variety of methods of flock replacement is encountered. The primary division is between those who rear their replacements and those who buy them, but, within these main sub-divisions many variations exist. Those who rear their own replacements are limited to the choice between introducing replacements either as lambs or as two-tooth ewes, but those who buy can introduce them at any stage from lambs to full-mouth ewes, or in any combination of the various age groups. Where home-bred replacements are the rule, ewes may be drafted for further breeding at any stage from four-tooth onwards, or they may be retained in the flock until unfit for further breeding: a similar choice of method of disposal is open to those who purchase young ewes as flock replacements, but where older ewes are purchased the choice is more circumscribed.

In practice a wide variation in the many possible combinations of incoming and outgoing ewes of different ages will be found, and the position is further complicated by the circumstance that replacement policy on individual farms may change from year to year according to changes in the relative prices of the various types and ages of ewes. Even the main division between home-reared and purchased replacements is by no means invariably followed, and a number of flocks will be maintained partly from each source of replacement, with the relative proportions from each varying considerably from year to year. In short, flock replacement policy not only covers a very wide range of differing methods but, on any particular farm, and especially on those where flying flocks are maintained, replacement policy may exhibit a very flexible pattern from year to year. In these circumstances a large sample of carefully selected farms would be required to provide an analysis of the costs of flock replacement along even the broadest of lines.

The present investigation only provides data for a comparison between the main divisions of self-maintained and flying flocks, and even in this case the data suffers from some marked deficiencies. Such an analysis can only be undertaken for flocks in which the overall pattern of management, apart from replacement policy, is comparable. It is limited in this case to the Ross and Hereford groups, the exclusion of the S/Spring group from the analysis being necessary on account of breed differences and associated differences in lambing percentages.

A direct comparison between Self-maintained and Flying Flocks in the Ross and Hereford groups is not however satisfactory, as differences in average costs arise, especially with regard to the relative cost of different types of foods, which clearly have no direct relationship to the method of flock replacement. An attempt can be made however to approach this problem from a combination of data obtained from a direct comparison of flock replacement costs, and a budgetary approach for the costs of foods, labour etc. The use of the budgetary method alone would, owing to a complete lack of some of the relevant data, merely beg more questions than it answered.

Before proceeding with this analysis, however, it is necessary to consider briefly the cost of rearing a two-tooth ewe, as this factor directly affects the relative costs of the two methods of flock replacement.

COST OF REARING A TWO-TOOTH EWE

The assessment of rearing costs, which are set out in Table 22, involve two separate stages. The first stage covers the breeding cycle during which the ewe-lamb is born, at the end of which it will be approximately eight months old; the cost of the lamb at this stage is the cost of maintaining the breeding ewe for the twelve-months' cycle, together with the additional costs involved for the lamb from birth until the autumn. The second stage consists of the cost of keeping the ewe lamb through the following twelve months, during which it increases in age from eight to twenty months old, and at the end of which it is drafted into the breeding flock as a two-tooth ewe. Owing to the circumstance that cost data for one year only is available, the two stages shown in Table 22 relate to different groups of animals, and both stages relate to the year 1954–5. This is clearly less satisfactory than cost data for the same group of animals over two consecutive years, but it does not seem probable that the costs obtained will show more than marginal differences from the actual costs.

Data presented in Table 22 is drawn from twelve self-maintained flocks in the three spring-lambing groups and covers, during the second period, a total of 725 ewe hoggs.

During the first period, up to eight months old, the net cost per head is just under £3 14*s.* 0*d.*, compared with an average value at that stage of £6 10*s.* 0*d.* per head. The second period yields a gross cost of just under £3 per head which, after deducting the value of wool shorn from the ewe hoggs, results

TABLE 22.

Average Cost of Rearing a Two-Tooth Ewe Hogg from Birth up to the Time of Entering the Breeding Flock at Twenty Months Old

Average per Head	Birth to 8 months old	Eight to 20 months old	Birth to 20 months old
Production Costs:	£	£	£
(1) Depreciation: Ewes and Rams	1·51	—	1·51
(2) Foods and Grazing:			
(*a*) Folded Roots	0·37	0·81	1·18
(*b*) Hand-fed Foods:			
Purchased Concentrates	0·10	—	0·10
Home-grown: Corn	·16	0·22	·38
Hay	·19	·18	·37
Roots, etc.	·28	·15	·43
(*c*) Grazing	1·23	0·71	1·94
Total Foods and Grazing	2·33	2·07	4·40
(3) Labour and Power:			
(*a*) Manual Labour	·90	0·61	1·51
(*b*) Power	·05	·05	·10
Total Labour and Power	0·95	0·66	1·61
(4) Miscellaneous Costs	0·34	0·20	0·54
Gross Cost	5·13	2·93	8·06
Less Sales of Wool	1·45	1·41	2·86
Net cost	3·68	1·52	5·20
Value of lamb at end of period	6·50	9·88	9·88
	Acres	Acres	Acres
Annual acres utilized	0·35	0·27	0·62

in a net cost of £1 10*s.* 0*d.* per head: during this twelve-month period the animal increases in value by nearly £3 8*s.* 0*d.* per head. Total net cost up to the time of drafting into the breeding flock is £5 4*s.* 0*d.* per head, and the market price at that time a little less than £10 per head. There are, therefore, substantial economies to be had in rearing rather than purchasing flock replacements, but, conversely, if replacements are reared, additional land will be utilised. Annual acreage requirements for each home-reared replacement averaged 0·62 acres, of which 0·35 acres are in respect of the first rearing stage, and 0·27 annual acres per head for the second.

A direct comparison of the two types of flock in the Ross and Hereford groups shows that for both systems of flock maintenance the rate of replacement was approximately 27 per cent—7 per cent deaths and 20 per cent of culls in both cases —and the price realised for all disposals, including deaths, averaged £3·37 in the Self-maintained flocks and £2·33 per head in the Flying Flocks.

The comparison that follows is based on a flock of 150 breeding ewes in both cases. For the Self-maintained flocks there will be, in addition to the 150 breeding ewes, 44 ewe hoggs carried throughout the year for a net cost of £1·52 per head (Table 22, Stage 2): of these 44 followers, on average one will die during the year and three, unsuitable for breeding, will be sold, leaving 40 two-tooth ewe hoggs at the end of the year to replace the 40 ewes that died or are culled from the flock. The net cost of maintaining these 40 ewe hoggs during the year, after deducting the value of the three culls sold, is £37. For the Flying Flocks, 40 replacements are purchased at an average cost of £9·7 per head, a total outlay per flock of £388. Sales of cull ewes amount to £135 per flock for the Self-maintained flocks (£3·37 × 40), and to £93 (£2·33 × 40) for the Flying flocks. The net cost of flock replacement is thus £388 − £93 = £295 for the Flying Flocks, and £37 − £135 = − £98 for the Self-maintained flocks, an overall advantage for the latter group of £295 + £98 = £393 per flock.

The average number of lambs produced per 100 ewes was, for 1954–5, 120 for the Self-maintained flocks and 133 lambs per 100 ewes for the Flying Flocks; the average value of lambs reared was £6·89 in the former group and £6·78 per lamb in the latter group. The total number of lambs reared from 150 ewes in the Flying Flock group is thus 200, all of which are available for sale, and worth, at 1955 price levels, £1,356. The total number reared in the Self-maintained group is 180 but, of these, 44 make no contribution towards the income from sheep for the year as they must be retained to rear on for flock replacements in the following year: the 136 lambs available for disposal have a total value of £937. The extra income from sales of lambs for the Flying Flocks is £419 per flock (£1,356–£937) which is slightly greater than the additional cost of flock replacement—£393—in this group.

It is assumed for the purpose of this comparison that the cost of keeping the breeding ewes and their lambs for the year is the same in both groups; it is true that in addition to

the 150 ewes in both groups the Flying Flock group carries 20 additional lambs but, in practice, there is probably very little additional cost involved in rearing 200 rather than 180 lambs from 150 ewes, and this extra cost will, in any case, be offset by the value of the wool shorn from the additional lambs. On the basis of the assumptions made here it seems reasonably clear that there is no difference of any significance in the overall results between the two methods of flock replacement, the extra cost of replacement in the Flying Flocks being almost precisely offset by the value of the additional lambs available for sale.

The matter however goes further than this. Although the margin per ewe and per flock is comparable in both cases, the total area of land involved in producing this margin is greater in the Self-maintained flocks to the extent of the land requirements of the followers carried during the year. This requirement has been assessed (Table 22, Stage 2) at 0·27 acres per hogg, equal, for the 44 ewe hoggs carried in the Self-maintained group, to a total of approximately 12 annual acres per flock. The average annual acreage requirement for ewes, rams and their lambs in the Ross and Hereford groups is 0·44 annual acres per ewe, or 66 acres per flock of 150 ewes. If an adjustment upwards is made to this figure for the Flying Flocks to allow for the extra lambs reared in this group, total acreage requirements may be put at 72 annual acres per flock: for the Self-maintained flocks the figure of 66 acres for ewes, rams and their lambs is increased by the 12 acres absorbed by the followers, to give a total land requirement of 78 annual acres per flock. And, if the margin per ewe is taken at £3·50 in both groups, the margin per acre becomes £6·73 for the Self-maintained flocks and £7·29 per acre for the Flying Flocks.

Much of the validity of this comparison turns upon the question whether the higher proportion of lambs reared per ewe in the Flying Flocks arises directly from the method of flock replacement, or whether the difference between the groups is fortuitous. There seem to be good reasons however for believing that the difference in lambing percentage is probably a real one, and the great majority of farmers questioned on this point, both those with Self-maintained and Flyling Flocks, agreed that a higher lambing average would, in fact, be obtained from a Flying Flock; and this for two main reasons. Firstly the Self-maintained flocks contain a considerably higher proportion of young ewes—approximately

one-quarter of the total ewes are two-tooth ewes in the Self-maintained group compared with ten per cent in the Flying Flocks—and the proportion of twins is normally lower for young ewes than for older, and the proportion of barreners higher. Secondly, the replacements purchased for the Flying Flocks in Herefordshire are mainly four-tooth ewes, obtained straight off rearing farms in the hill districts along the Welsh border, where, at the time of purchase they will have recently finished rearing a crop of lambs under fairly hard conditions: they are therefore in ideal condition for flushing, and the month or so they spend on the fertile lowland farms before tupping is held to constitute the best possible application of this technique for increasing the number of lambs conceived.

Although good reasons undoubtedly exist to account for a higher lambing percentage in Flying Flocks, whether these reasons are sufficient to account for all the difference shown between the two groups it is not possible to say. But perhaps the most important conclusion to be drawn from the evidence is that, under conditions prevailing in 1954–5, the method of flock replacement is not to be reckoned among the more important factors influencing the profitability of breeding flocks.

Since this investigation was undertaken in 1954–5 however circumstances have changed somewhat: in the autumn of 1956 the average price of four-tooth ewes of the type purchased for replacements in the Herefordshire Flying Flocks fell by about £1 per head, but this was followed by a very sharp increase in the price of this class of breeding ewe in the autumn of 1957, an increase which is conservatively estimated at £3 over the 1956 level and £2 per head above the 1955 level. Each increase of £1 per head in the price of four-tooth ewes decreases the margin in the Flying Flocks by approximately 5*s*. per ewe compared with the Self-maintained flocks, so the adverse effect upon the Flying Flocks of the increase in the cost of purchased replacements in 1957 may be assessed at 15*s*. per ewe compared with the previous year, and 10*s*. per ewe compared with 1955. Not quite the full advantage will however accrue to the Self-maintained flocks, as the cost of rearing replacements will have increased to a certain extent, but the increased price of purchased replacements in 1957 will certainly have tipped the balance of advantage fairly decisively in favour of the Self-maintained flocks. Based upon the data and assumptions involved in this analysis, it may be suggested, as a rough practical guide as to where the

financial advantage lies between Flying and Self-maintained flocks, that if at the time of the autumn store sales the current price for store lambs from lowland flocks is compared with the price of four-tooth draft ewes, then, if the price of draft ewes is less than £3 per head above store lamb prices the advantage will lie with the flying flocks; there will be no significant advantage either way if the draft ewe prices are £3–£4 higher, while the advantage will be with the self-maintained flocks if the price of four-tooth ewes is more than £4 per head above the price of store lambs.

However, although the high prices of purchased replacements in 1957 has almost certainly made rearing of replacements more economical than their purchase it is unlikely to influence those with flying flocks to make any drastic change in their flock replacement policy: the fluctuations that have occurred in recent years in the price of draft ewes give no grounds for believing that the price level will be permanently maintained at the high level attained in 1957. In some cases it may be possible to keep on some of the older ewes for another season, and thus defer part of the cost of flock replacement until another year when the price of draft ewes may be lower. This adjustment is not open to a farmer who already "wears out" his ewes, but in this case it may be possible to switch temporarily to the purchase of older and less expensive replacements, or home-bred lambs may be put to the ram, or, if no other method is practicable, the size of the breeding flock may be temporarily reduced by a decision not to replace some or all of the culled ewes for the coming year. Only the clearest possible evidence that a considerably higher level of prices for draft ewes has come to stay is likely to be effective in persuading farmers whose replacement policy is traditionally wedded to the purchase of ewes to change to a self-maintained flock.

RESULTS FOR BREEDING FLOCKS RE-CALCULATED AT 1956–7 PRICE LEVELS

Production and Production Costs ascertained in 1954–5 have been re-calculated at prices prevailing two years later in 1956–7. The assumption implicit in this calculation that physical inputs and outputs will be the same in the two years is clearly unlikely to be completely valid—different seasons bring different weather conditions which affect both the need for, and the supply of sheep keep, while the size of the lamb crop will

vary from year to year. The calculation should however give some indication of how changes in the price levels of inputs and outputs have affected the trend of profitability of the breeding flocks over this period.

TABLE 23.

Production, Production Costs and Margin per Ewe and per Annual Acre for 1954–5 Recalculated at 1956–7 Price Levels

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
Average per Ewe	£	£	£	£	£
Production					
Value of Lambs	10·52	8·20	8·24	9·29	9·42
Net Depreciation of Flock	1·33	·79	·93	1·47	1·19
Production of Sheep	9·19	7·41	7·31	7·82	8·23
Sales of Wool	1·77	1·94	1·94	1·76	1·87
Total Production	10·96	9·35	9·25	9·58	10·10
Production Costs					
Total Foods and Grazing	5·24	4·17	3·39	2·98	3·56
Labour and Power	2·24	1·98	1·54	1·35	1·58
Miscellaneous Costs	·65	·52	·36	·55	·47
Total Production Costs	8·13	6·67	5·29	4·88	5·61
Margin: Surplus	2·83	2·68	3·96	4·70	4·49
Average per Annual Acre:					
Total Production	30·44	23·38	18·50	22·81	19·06
Total Production Costs	22·58	16·68	10·58	11·62	10·58
Margin: Surplus	7·86	6·70	7·92	11·19	8·48

During 1957, total returns (auction price plus guarantee payments) for fat lambs were higher in all months between January and October than during the corresponding period of 1955 (see Appendix Table I). For the period February–March, when out-of-season fat lamb is marketed from the S/Autumn group, total returns were 7 to 10 per cent higher in 1957, but total returns for early fat lambs in April–May were less than 1 per cent up, and only 1 to 5 per cent higher in June–July. For the remainder of the period, August to October, total returns were higher in 1957 by 10 to 15 per cent, while the price of store lambs retained at the end of the period was approximately 15*s.* per head, or 11 per cent, higher. The average increase for all fat lambs sold is approximately 10*s.* per head in the S/Autumn group, 4*s.* 6*d.* for the S/Winter

group, and from 12*s.* 6*d.* to 14*s.* 6*d.* per fat lamb for the three spring-lambing groups. The average increase in value for all lambs produced is approximately 9*s.* per lamb in the S/Autumn group, 13*s.* in the S/Winter, and 14*s.* per head in the three spring-lambing groups.

Changes have also occurred between 1954–5 and 1956–7 in the price level of factors affecting the calculation of net flock replacement costs. The average price realised by cull ewes is approximately the same in both periods, but the price of purchased replacements bought in the autumn of 1956 was, on average, about £1 per head lower than in the corresponding period of 1954: assuming the same rate of flock turnover at both periods there would therefore be a fall in 1956–7 in the cost of depreciation for the breeding ewes. Store lamb prices were about £1 per head lower in the autumn of 1956 than in 1954, and there is therefore an increase in 1956–7 in the appreciation of followers also. The fall in the cost of purchased replacements affects the Flying Flocks, and the increased appreciation of followers the Self-maintained flocks, but in both cases the movement is favourable, and the net effect is to bring about a substantial decrease in the cost of flock replacement in 1956–7 compared with 1954–5, a decrease which ranged from just under 10*s.* per ewe in the S/Winter and Spring groups to 13*s.* per ewe in the Ross group.

The average price per lb. realised for wool from the 1957 clip was appreciably lower than for the 1955 clip (Appendix Table K). The average guaranteed price per lb. for all wool produced in the United Kingdom was just over 5 per cent lower in 1957, but the proportionate fall in price for the better quality wool produced by the lowland arable flocks is greater. The price of Dorset Down wool for example fell by 10 to 13 per cent between the 1955 and 1957 clips, and Dorset Horn wool by 8 to 11 per cent; wool produced by sheep in the Ross and Hereford groups declined in price to a somewhat smaller extent, i.e. 4 to 9 per cent. Total returns from sales of wool are lower in 1957 for the three Somerset groups by 8 to 9 per cent, equal to approximately 3/6 per ewe, and by 7 to 7½ per cent in the two Herefordshire groups, or 2/9 per ewe.

Lower sales of wool in 1957 offset part of the increase in the value of lambs produced and the lower cost of flock depreciation recorded in all groups, but total production in 1956–7 is 9 to 12 per cent higher in the two early-lambing groups, equal to approximately 20*s.* per ewe, 14 per cent higher in the S/Spring group (22*s.* 6d. per ewe) and in the Hereford

group (25*s*. per ewe), and 17 per cent higher in the Ross group, equal to an increase of 28*s*. per ewe. Changes in the price level of lambs, and of purchased flock replacements between 1954–5 and 1956–7 have clearly favoured the more orthodox spring-lambing flocks to a greater extent than the early-lambing flocks.

On the cost side, by far the most important differences between the two periods arise from increased wage rates which affect costs both directly through the increased cost of shepherding, and indirectly through the cost of production of home-grown foods, and especially of folded roots. Minimum wage rates for labour engaged on shepherding were, on average, 16*s*. per week higher in 1956–7 than in 1954–5, while overtime rates were 1*s*. 3*d*. per hour higher: for crop production, minimum rates were 15*s*. per week higher for crops grown for feeding in the sheep year 1956–7.

Total production costs, after adjusting for major changes in wage rates and for minor changes in other items increased in 1956–7 compared with 1954–5 by 6*s*. 6*d*. to 7*s*. per ewe in the three spring-lambing groups, by 9*s*. in the S/Winter groups, and by 11*s*. per ewe in the S/Autumn groups. The increase in total production in 1956–7 thus exceeds the corresponding increase in total production costs in all groups, but the increase in production is smaller for the two early-lambing groups, and the increase in costs greater.

Margin per ewe is higher in 1956–7 by approximately 21*s*. 6*d*. in the Ross group, 18*s*. in the Hereford group, 15*s*. 6*d*. in the S/Spring, 11*s*. in the S/Winter and 8*s*. per ewe in the S/Autumn group. The sheep year 1956–7 was undoubtedly a very good one for breeding flocks, due to higher lamb prices and to lower prices for ewe replacements which together more than offset increases in cost and lower wool prices. It is worth noting however that the favourable effect on lowland flocks of lower prices for breeding ewes represents a corresponding diminution of the returns accruing to another section of the sheep industry, the upland sheep rearers. Rearers of draft ewes will, however, have more than recouped any losses from lower prices in 1956 by the considerably increased prices realised in the autumn of 1957. There is little doubt but that the very favourable results experienced by lowland sheep flocks in 1956–7, in contrast to the decline in profitability in some other branches of farming activity, have stimulated considerable interest in the sheep enterprise; some who already have sheep will wish to expand their flocks, and others, at

present without, are seeking to introduce sheep into their farming system. The immediate effect of an increased demand for breeding ewes, operating on a level of supply which cannot be quickly increased is seen in the high level to which the price of breeding ewes advanced in the autumn of 1957. Although this price increase will have been welcomed by the breeders of draft ewes, it means that for lowland flocks relying upon purchased replacements the 1957–8 sheep cycle will have started off with a considerably increased cost for depreciation of the breeding flock, especially as there appears to be little, if any, likelihood of the price of old cull ewes increasing to offset the higher cost of replacements.

The higher price of breeding ewes in 1957 appears likely to increase the net cost of flock depreciation for 1957–8, compared with the previous year, by approximately 12*s*. to 15*s*. per ewe in the S/Winter and Spring groups, by 18*s*. in the S/Autumn and Hereford groups, and by just over 20*s*. per ewe in the Ross group where nearly all replacements are bought. Further, home-grown foods produced for sheep will have cost more in 1957–8 as a result of a wage increase of 6*s*. per week in September 1956, while shepherding costs in 1957–8 will be higher on account of the 9*s*. per week rise in wage rates that occurred in October 1957. Assuming that the level of feeding and the relative amounts of the different types of food provided are similar in 1957–8 to those recorded for 1954–5, then the total cost of foods, grazing and labour will be higher in 1957–8 than in the previous year on account of increased wage rates, by amounts ranging from 3*s*. per ewe in the Ross group to 5*s*. in the S/Autumn group. The total increase in costs due to higher wage rates and the increased cost of flock depreciation in 1957–8, assuming that there will be no further increase in wage rates before the autumn of 1958, will be, on the basis of the assumptions made, approximately 16*s*. per ewe in the S/Winter group, 19*s*. in the S/Spring, and 21*s*. to 23*s*. per ewe in the three remaining groups.

To meet higher production costs the average value of lambs produced in 1957–8 will need to be higher than in 1956–7 by 15*s*. to 17*s*. per head in the S/Winter, Spring and Hereford groups, and by 18*s*. to 19*s*. per lamb in the Ross and S/Autumn groups; higher still if the price received for wool proves to be lower for the 1958 clip. These figures are equivalent to increases of the order of 4*d*. to 5*d*. per lb. deadweight in the price of lambs: what the actual price realised will be depends mainly upon the schedule of standard prices to be determined

for 1958–9, but it seems clear that the 1957–8 sheep year will be a distinctly less favourable one for lowland breeding flocks than was the case in 1956–7. These calculations however relate to average results for the groups: in-so-far as the less favourable results likely to arise in 1957–8 are due to a considerable extent to the higher price of purchased breeding ewes the effect will be much less marked for Self-maintained than for Flying Flocks.

Winter Root-fed Sheep, 1954–5

This section deals with lambs fattened on folded root or green fodder crops during the winter months of 1954–5: a small proportion of these sheep were sold, mainly off beet tops, as fat lambs between November 1st and December 31st, but the bulk went as fat hoggets between January and May.

In the S/Autumn group, where ewes and their lambs are folded right through the winter, the winter fattening of hoggets is unusual, and three farms only in this group were concerned with this type of production; results for these three farms have been combined with ten farms in the S/Winter group engaged in winter feeding, which, in this group, is generally on a restricted scale, and averaged only 75 hoggs fed per farm. Just over half the farms in the S/Spring group are engaged in winter feeding, but these fed-out substantial numbers—over 200 hoggs per farm on average. All farms in the Ross and Hereford groups are engaged primarily in winter feeding, with an average of approximately 170 hoggs per farm in each group.

Of the hoggs fattened, over 75 per cent in all groups were home-reared, and the proportion is as high as 90 per cent for the Ross group. Disposal of hoggs, expressed as a percentage of total numbers at the beginning of the feeding period, is as follows:

Per cent of numbers in Opening Valuation

	S/Winter %	*S/Spring* %	*Ross* %	*Hereford* %
Sold fat . . .	94·3	94·5	98·1	98·2
Died . . .	1·7	1·8	1·0	1·4
Remaining on hand .	4·0	3·7	0·9	0·4
	100·0	100·0	100·0	100·0

Details of Production, Production Costs and Margin per hogg are given in Table 24. The calculation of results is based upon the number of fat hoggs sold or remaining on hand at the end of the feeding period; the initial cost of any animal that died, and the cost of any foods, labour etc. incurred up to the time of death is thus spread over the survivors.

PRODUCTION

Production of Sheep represents the difference between the average price realised for fat sheep, and the cost of the store lamb. The average cost of store lambs is approximately £7 7*s*. 0*d*. per head in all groups except the Ross group, where it is about 5*s*. per head higher. The average price realised by fat hoggs, together with the average value of those remaining on hand at the end of the feeding period is just over £9 per head in the Hereford group, and £8 15*s*. 0*d*. to £8 18*s*. 0*d*. in the remaining three groups.

Details of sales of fat hoggs are set out in Tables 25 and 26, while Appendix Table L, gives, for all groups combined, the average price realised per head and per lb. deadweight by six weight groups ranging from under 40 lb. to over 76 lb. estimated carcase weight per head.

Between the various groups some fairly marked differences exist in the monthly incidence of sales. The high proportion of sales in Novenber in the S/Winter group represents lambs, in forward condition at the end of the grazing season, which were finished off after only a brief period of folding, while the relatively high proportion of sales in December in this group, and also in the Ross group, arise mainly from a few farms where lambs are kept on for the primary purpose of clearing up beet tops. The level of sales rose markedly in February, and reached a peak in March in all groups except the Hereford, in which nearly 40 per cent of total sales occurred in April. April and May combined accounted for only 8 per cent of total sales in the S/Winter group, and under 14 per cent in the Ross group, compared with 30 per cent in the S/Spring and 47 per cent in the Hereford group: the average length of the feeding period is, in consequence, greatest in the Hereford and S/Spring groups, and least in the S/Winter group where nearly 25 per cent of fat animals were sold by Christmas.

Generally speaking, total returns per lb. estimated dressed carcase weight were highest in November–December and lowest during March, while a distinct recovery in returns occurred in April–May. The average weight of fat sheep is

TABLE 24.

Winter-Fed Sheep. Average Results per Hogg Fed, and per Annual Sheep Acre

	Somerset		Herefordshire	
	Winter*	Spring	Ross	Hereford
	No.	No.	No.	No.
Number of Farms	13	9	12	17
Hoggs fed per Farm	75	202	168	174
Averages per Hogg Fed	£	£	£	£
PRODUCTION:				
Price realised by Fat Hoggs	8·83	8·89	8·74	9·01
Cost of Store Lambs	7·40	7·35	7·60	7·38
Production of Sheep	1·43	1·54	1·14	1·63
Sales of Wool	—	—	—	0·01
TOTAL PRODUCTION	1·43	1·54	1·14	1·64
PRODUCTION COSTS:				
(1) *Foods and Grazing*				
(*a*) Folded Roots and Green fodder	1·18	1·26	1·20	1·28
(*b*) Hand-fed Foods				
(i) Purchased	0·16	—	0·11	0·15
(ii) Home-grown: Corn	·21	0·08	·28	·56
Hay	·07	·07	·22	·28
Roots, etc.	·05	·05	·02	·02
Total Hand-fed Foods	0·49	0·20	0·63	1·01
(*c*) Grazing	0·02	0·01	0·01	0·01
Total Foods and Grazing	1·69	1·47	1·84	2·30
(2) *Labour and Power*				
(*a*) Manual Labour	0·38	0·28	0·23	0·34
(*b*) Power	·04	·03	·03	·03
Total Labour and Power	0·42	0·31	0·26	0·37
(3) *Miscellaneous Costs*				
(*a*) Transport and Marketing	0·16	0·18	0·16	0·17
(*b*) Other	·13	·06	·15	·20
Total Miscellaneous Costs	0·29	0·24	0·31	0·37
TOTAL PRODUCTION COSTS	2·40	2·02	2·41	3·04
Margin: Deficit	0·97	0·48	1·27	1·40
	No.	No.	No.	No.
Number of Hoggs fed per Annual Sheep Acre	12·3	13·2	10·0	9·8
	Weeks	Weeks	Weeks	Weeks
Average length of feeding period	14·4	17·9	17·6	18·2
Average Results per Annual Sheep Acre:	£	£	£	£
Total Production	17·60	20·37	11·36	16·09
Total Production Costs	29·46	26·75	24·10	29·76
Margin: Deficit	11·86	6·38	12·74	13·67

* Includes three farms in the S/Autumn group.

TABLE 25

Winter-Fed Sheep: Monthly Distribution of Sales and Average Price Realised per Head

	Somerset				Herefordshire			
	Winter		Spring		Ross		Hereford	
	Per cent total numbers sold	Average price per head	Per cent total numbers sold	Average price per head	Per cent total numbers sold	Average price per head	Per cent total numbers sold	Average price per head
	%	£	%	£	%	£	%	£
November	17·0	8·96	10·9	8·79	4·0	8·40	2·8	9·72
December	7·9	9·28	1·8	7·46	7·0	9·39	1·9	8·72
January	11·3	9·78	7·7	9·34	9·0	9·90	7·4	9·58
February	25·6	9·11	18·5	9·01	26·5	8·91	14·2	9·23
March	30·2	8·44	31·0	8·80	39·9	8·34	26·3	8·69
April	4·7	9·08	24·9	8·72	9·8	8·31	39·9	9·05
May	3·3	7·35	5·2	9·21	3·8	9·53	7·5	8·83
All months	100·0	8·91	100·0	8·86	100·0	8·75	100·0	9·02

TABLE 26

Winter-Fed Sheep. Average Estimated Dressed Carcase Weight per Head, and Average Price per lb. Realised: by Months

	Somerset				Herefordshire			
	Winter		Spring		Ross		Hereford	
	Average weight per head	Average price per lb.	Average weight per head	Average price per lb.	Average weight per head	Average price per lb.	Average weight per head	Average price per lb.
	lb.	d.	lb.	d.	lb.	d.	lb.	d.
November	53·0	40·6	50·9	41·4	48·3	41·7	57·9	40·3
December	59·5	37·4	41·7	42·9	60·0	37·5	52·0	40·3
January	64·5	36·4	57·3	39·1	61·8	38·4	59·9	38·4
February	60·5	36·1	56·0	38·6	59·5	35·9	57·7	38·4
March	54·7	37·0	56·9	37·1	54·9	36·5	57·3	36·4
April	55·1	39·5	52·8	39·6	50·9	39·2	55·7	39·0
May	58·2	30·3	55·5	40·1	53·2	43·0	52·7	40·2
All months	57·5	37·2	54·7	38·8	56·4	37·2	56·5	38·3

highest in the S/Winter group, averaging 57½ lb. per head over the period compared with between 56–57 lb. in the Ross and Hereford groups, and nearly 2 lb. per head lower in the S/Spring group. Average return realised per lb. is highest in the S/Spring group where hoggs sold are lighter on average, and where over 42 per cent were sold in the higher-priced months. The average return for the Hereford group is ½*d.* per lb. lower for, although the proportion of hoggs sold in the higher-priced months is over 50 per cent, the average weight per head is greater than in the S/Spring group. In the S/Winter and Ross groups the average price received is just over 1*d.* per lb. lower than in the Hereford group, due mainly to a heavy concentration of sales in the relatively low-priced months February–March. The higher returns per lb. in the S/Spring group compared with the Hereford and S/Winter groups is more than offset however by the lower weight per head in the S/Spring group, and the average return per head in this group is lower than in the other two groups.

Although total returns were higher before Christmas and again during April–May, and lower in February–March, it would not be realistic to expect any material change on this account in the incidence of sales of fat hoggs on the type of farm with which this investigation is concerned: any attempt to obtain higher prices by selling before the end of January would, if it became at all general, not merely result in an increased supply of fat sheep and lower prices at that period, but would also mean that the sheep would be in folds for too short a period to perform their primary function of consuming all the acreage of roots called for by the rotation: it would involve, in fact, not a change in the system of sheep management alone, but a change in the whole system of farming. Any attempt to defer sales till April–May will certainly permit sheep to spend the maximum period on the arable land, but it will give rise to difficulties in many cases in providing adequate keep over this extended period, while difficulties will also arise in the Spring from the presence of sheep folded on arable fields required for cultivation. In any case there is no certainty that prices will necessarily be higher in April–May, while any general trend towards a greater concentration of sales then will almost certainly be self-defeating by lowering the price at this period. In point of fact total returns per lb. in the following year, 1955–6, were lowest in the period November–January, and highest in March–April; in 1956–7 the pattern changed again and total returns were higher in

February–March than in April, with returns in the period November–December at a relatively low level despite high guarantee payments.

Total Production of Sheep (i.e. the Feeder's Margin) averaged approximately £1 9*s*. 0*d*. and £1 11*s*. 0*d*. per hogg in the two Somerset groups, £1 13*s*. 0d. in the Hereford group where returns are higher, and £1 3*s*. 0*d*. per head in the Ross group where the returns per head are relatively low and the cost of the store lamb relatively high.

PRODUCTION COSTS

The maximum difference in total production between the groups is thus 10*s*. per hogg; total production costs however differ by twice this amount, and it is the level of production costs which primarily determines the size of the margin.

TOTAL FOODS

Of total costs, foods account for 70 to 76 per cent in all groups, and the level of food costs is thus the main determinant of the margin.

Average quantities of foods fed per hogg are shown in Table 27.

There is no great difference between the groups in the average cost per hogg of folded roots. The acreage of roots provided per 100 hoggs is nearly 50 per cent greater in the Ross group than the S/Spring group but, whereas all roots for folding in the latter group are main-crop roots, costing over £20 per acre to produce, in the former group 36 per cent are catch crops or beet tops, and the average cost of all folded roots is only just over £13 per acre in this group. The main differences in food costs are in relation to hand-fed foods, and especially to quantitites of concentrates and hay feed. Purchased concentrates and home-grown corn combined averaged less than 12 lb. per hogg in the S/Spring group, 40 to 50 lb. in the S/Winter and Ross groups, and over 90lb. per head in the Hereford group. Hay was very heavily fed in both Herefordshire groups, averaging over $\frac{3}{4}$ cwt. per hogg in the Ross group and 1 cwt. per head in the Hereford group: the corresponding figure for both Somerset groups is just under $\frac{1}{4}$ cwt. per head. Total foods and grazing cost is thus highest in the Hereford group with an average cost of £2 6*s*. 0*d*. per hogg, and lowest in the S/Spring group, where very little hand feeding is undertaken, at just over £1 9*s*. 0*d*. per hogg: this latter group is, in fact, the only one in which the total cost of foods does not

TABLE 27.

Winter-Fed Sheep: Average Quantities of Foods Consumed

	Somerset		Herefordshire	
	Winter	Spring	Ross	Hereford
Folded Roots and Green Fodder	Acres	Acres	Acres	Acres
Acres per 100 hoggs	7·8	6·2	9·2	7·2
Per cent of total:	%	%	%	%
(*a*) Main crop	64	100	64	72
(*b*) Catch crop	27	—	14	9
(*c*) Beet tops	9	—	22	19
Total	100	100	100	100
Average cost per acre	£15·1	£20·2	£13·1	£17·6
Hand-Fed Foods:				
Average quantities fed per hogg:	lb.	lb.	lb.	lb.
(*a*) Purchased concentrates	12·8	—	10·4	17·1
(*b*) Home-grown corn	29·5	11·2	39·0	74·6
Concentrates and corn	42·3	11·2	49·4	91·7
(*c*) Hay	27	27	91	113
(*d*) Roots	104	74	27	38
Labour:	Hrs.	Hrs.	Hrs.	Hrs.
Man hours per hogg	2·36	1·81	1·44	2·12
Man hours per week per 100 hoggs	16·4	10·1	8·2	11·6

exceed total production. The total cost per hogg does not take account however of differences in the length of the feeding period, but if total food costs are calculated per week the level is still highest in the Hereford group at over 2*s.* 6*d* per hogg per week, but the second highest figure is now found in the S/Winter group at 2*s.* 4*d.*, while corresponding figures for the Ross and S/Spring groups are 2*s.* 1*d.* and 1*s.* 8*d.* per hogg-week respectively.

MANUAL LABOUR

These costs are highest in the S/Winter group, and man hours per hogg per week are twice as high in this group as in the Ross group where folding is generally more extensive in nature. Apart from the type of folding practised, labour requirements per head depend largely upon the size of flock.

The small flocks of root-fed sheep have a labour requirement more than 80 per cent greater than for flocks of more than 250 hoggs. For flocks of 75–150 head the requirement is approximately 20 per cent less than for the smallest size group,

TABLE 28

Winter-Fed Sheep. Labour Requirements According to Size of Flock

Number Fed per farm	Number of Flocks	Average Number Fed per Flock	Hours per 100 hogg weeks
	No.	No.	Hrs.
Under 75 . .	11	51	14·7
75–150 . .	13	122	11·9
150–250 . .	15	179	8·5
Over 250 . .	6	312	8·1

while for flocks of 150–200 it is about 30 per cent less again; for still larger flocks further economies appear slight, and the labour requirement per head per week for flocks with an average of over 300 hoggs is only about 5 per cent less than for those with approximately 180 hoggs per flock.

Among all flocks included in this investigation there were four in which roots were cut for the sheep later on in the season: this extra labour is concentrated mainly in the months of February and March, and the average labour requirements during this period was 35·4 man hours per 100 hogg-weeks i.e. just over 5 hours per day per 100 hoggs, which is three times as great as that incurred for flocks of comparable size for which roots are not cut.

Production per hogg was no higher where roots are cut, and the slight saving in food costs in these flocks, which may or may not be a direct result of cutting the roots, is far more than offset by the greatly increased labour costs.

The monthly distribution of total man hours engaged on winter-fed sheep is shown in Table 29. This analysis excludes those farms in which roots are chopped for the hoggs. The distribution is largely affected by the incidence of sales of fat hoggs, which is later, on average, in the S/Spring and Hereford groups than in the S/Winter and Ross groups.

MISCELLANEOUS COSTS

Transport and marketing costs per hogg are similar in all groups and, although other miscellaneous costs are higher in the Ross and Hereford groups, and low in the S/Spring group, there is no important difference between the groups in total.

TOTAL PRODUCTION COSTS

Total costs are more than £3 per hogg in the Hereford group, due mainly to high food costs, which arise partly from heavy

TABLE 29

Winter-Fed Sheep: Monthly Distribution of Manual Labour Requirements

	Somerset		Herefordshire	
	Winter	Spring	Ross	Hereford
	%	%	%	%
October . . .	14·3	9·8	9·8	11·6
November . . .	16·1	14·7	16·8	15·2
December . . .	19·1	14·8	19·2	16·7
January . . .	17·5	18·3	22·2	16·4
February . . .	15·4	18·9	16·1	16·2
March . . .	12·1	16·9	13·0	16·5
April . . .	3·9	4·9	2·7	5·8
May	1·6	1·7	0·2	1·6
All months .	100·0	100·0	100·0	100·0

rates of feeding and partly from the longer feeding period in this group. Lowest total costs occur in the S/Spring group at a fraction over £2 per hogg, but not even in this group is Total Production sufficient to cover Total Costs, and a deficit margin of nearly 5*s*. per head is incurred. In the remaining groups the deficit varies from just under 20*s*. per hogg in the S/Winter group to 28*s*. per hogg in the Hereford group.

ACREAGE DEVOTED TO WINTER-FED SHEEP

An analysis of the acreage requirements per 100 hoggs fed is shown in Table 30.

Over the whole fattening period total annual sheep acres utilised varies from about 7½ acres per 100 hoggs in the S/Spring group to over 10 acres in the Ross and Hereford groups: calculated per 100 hoggs per week, to eliminate differences arising from varying lengths of the feeding period, the variation is much less, ranging from 0·42 acres in the S/Spring group to 0·56–0·57 annual acres per 100 hoggs per week in the three remaining groups. Although there are some marked differences between the groups in the proportions of the various types of folded roots and green fodders, there is no very great difference in the overall annual acreage per 100 hoggs for this category of food; the main difference between the groups lies in the acreage required to provide the hand-fed foods consumed, which varies from under one annual acre per 100 hoggs in the S/Spring group to very nearly four acres in the Hereford group.

TABLE 30

Winter-Fed Sheep. Annual Acreage Utilised by Sheep. Average per 100 Hoggs

Annual Sheep Acres	Somerset				Herefordshire			
	Winter		Spring		Ross		Hereford	
	Per 100 hoggs	Per cent	Per 100 hoggs	Per cent	Per 100 hoggs	Per cent	Per 100 hoggs	Per cent
	Acres	%	Acres	%	Acres	%	Acres	%
(1) Folded Roots and Green fodder								
(*a*) Main crop	4·98	61·1	6·29	83·0	5·84	58·3	5·21	51·1
(*b*) Catch crop	1·06	13·1	—	—	·61	6·1	·32	3·1
(*c*) Beet tops	·25	3·1	—	—	·76	7·6	·50	4·9
Total	6·29	77·3	6·29	83·0	7·21	72·0	6·03	59·1
(2) Home-Grown Hand-Fed Foods								
(*a*) Corn	0·88	10·9	0·33	4·3	1·24	12·4	2·41	23·5
(*b*) Hay	·35	4·2	·37	4·9	1·27	12·7	1·48	14·5
(*c*) Roots and Green fodder	·15	1·9	·17	2·3	·06	·6	·08	0·8
Total	1·38	17·0	0·87	11·5	2·57	25·7	3·97	38·8
(3) Grazing	·47	5·7	·41	5·5	·23	2·3	·21	2·1
Total Annual Sheep Acres	8·14	100·0	7·57	100·0	10·01	100·0	10·21	100·0
Annual Sheep Acres per week per 100 hoggs	Acres 0·57		Acres 0·42		Acres 0·57		Acres 0·56	

PRODUCTION, PRODUCTION COSTS AND MARGIN PER ANNUAL ACRE

The level of production per annual acre varies directly with the per hogg figures for production and inversely with the acreage utilised per hogg: the S/Spring group, with the second highest level of production per hogg, and the lowest level of acreage requirement, has the highest level of production per acre at just over £20, compared with under £12 for the Ross group and £16–£18 per acre in the two remaining groups. The deficit margin per annual acre varies from approximately £6 8*s*. 0*d*. in the S/Spring group to £13 13*s*. 0*d*. per acre in the Hereford group.

In considering these distinctly unfavourable figures resulting from winter feeding in 1954–55 two points should be borne in mind. Firstly, all foods consumed by sheep have been charged at the gross cost of production and no allowance made for the residual manurial values of these foods. The reason for this procedure is that not only is the experimental data relating to the manurial value left by folded sheep meagre in the extreme, but there exists among practical agriculturalists themselves an acute difference of opinion on this point. These views range from a conviction that folded sheep exert an influence upon soil fertility which is beyond the cognizance of the soil chemist to the much more prosaic view at the other extreme that, unless hand-fed with purchased concentrates, folded sheep add nothing to the fertility of the farm, merely transferring fertility from one field to another (which may indeed be an important function in some cases), and that, even when hand-fed with purchased concentrates they add nothing to the farm which could not be equally well provided, and much more cheaply, by a bag or two to the acre of a compound fertiliser and the regular ploughing-in of leys. On the former view, which still prevails among a not inconsiderable number of farmers whose standard of farming and level of profits must command the highest regard, artificials are regarded as "comparable to drugs, valuable when needed but a poor substitute for good health, and liable to set up a craving requiring bigger and bigger doses to maintain the position". A less extreme view, and one which holds the field among the majority of farmers in the Herefordshire groups, and among many in Somerset, is that which, while admitting that fertility can be adequately preserved by leys and artificials without the intervention of folded sheep, maintains that this can be done only by reducing the proportion of the farm under tillage and cash crops, thus reducing

both the intensity and the profitability of the system of farming as a whole. This question, which is basically a question as to whether a two-compartment system or a ley farming system is more profitable, is clearly a most important one—and one about which very little information is available—but it is not one upon which a consideration of the sheep enterprise alone can shed much direct light.

A calculation of the residual values of all foods consumed by sheep, both folded roots and hand-fed foods, can be made on the basis of values recommended for tenant-right valuation. These values relate only to the inorganic manurial constituents, and take no account of the fertility aspect associated with the humus content, and there may be no very close connection between the assessed value of the inorganic constituents and their actual value in promoting subsequent crop production. The calculation made on this basis shows that the residual manurial value of all foods consumed, calculated per acre of roots folded, averages just under £3 in the S/Winter group and £3 7*s*. 0*d*. to £3 16*s*. 0*d*. per acre folded in the remaining three groups. It may be noted in passing that the extent to which most of the farmers concerned modify their fertiliser policy for crops which follow folded roots indicates that, in practice, their assessment of the residual manurial value of folded roots is lower than the figures yielded by the conventional calculation of manurial values of feeding stuffs. However, accepting for the moment this figure of £3 to £3 16*s*. 0*d*. per acre, the total contribution that all foods consumed by winter-fed sheep makes to the total fertiliser requirements of the farm averages £17 per farm in the S/Winter group, where the number of hoggs fed per farm is low, £42 in the S/Spring group and just under £50 per farm in the Ross and Hereford groups. In practice these figures probably over-estimate the value to following crops of the inorganic constituents, and any high claims for folded sheep as fertility builders must rest largely upon other considerations.

Residual manurial values of foods, as calculated above, averaged approximately 4*s*. 6*d*. per hogg fed in the S/Winter group, 4*s*. 2*d*. in the S/Spring, and 5*s*. 6*d*. to 5*s*. 9*d*. per hogg in the Ross and Hereford groups.

The second relevant point in considering the poor financial results from winter feeding in 1954–5 is a more specific one, and arises directly from the circumstance that the period followed immediately upon decontrol of fatstock marketing, and exhibits some abnormal features due to the transitional

nature of the period. The price ruling for store lambs in the autumn of 1954 had clearly been determined in the belief on the part of most feeders that the price for fat hoggets was likely to be similar under decontrol to that established in the previous winter under the Ministry of Food's price schedule. This proved, in the event, to be far from the case, and the price of store lambs was soon revealed to have been determined at a level considerably higher than that warranted by the price of fat hoggets under the new demand conditions established in the free market. The store market for lambs in the autumn of 1955 however indicates that the experience of the 1954–5 winter feeding period had been a salutary one, and prices for store lambs were fully 20*s*. per head lower in 1955 than in the previous autumn.

The very different circumstances resulting from decontrol relate not only to the level of store lamb prices necessary to yield an adequate feeder's margin, but also to feeding practice. The immediate and complete revulsion on the part of consumers to carcase fat in almost any shape or form revealed that a market for the fat, heavy-weight hogget hardly existed under free market conditions, and any hogget pushed above about 60 lb. deadweight incurred a considerable increase in cost, but only a slight increase in the total returns per head—and this largely due to the operation of the guarantee payment scheme which awarded to the heavy hogget a return denied to it by the market. Clearly some adjustment was called for in feeding practice, especially for hand-fed foods, if hoggets were to be kept down to economical weights. An enquiry undertaken among the farmers concerned in the investigation regarding future winter-feeding policy indicated a widespread intention to reduce hand feeding, especially of corn and purchased concentrates. In the Herefordshire groups a movement to replace Oxford Down rams with those of a breed likely to produce lambs of a leaner type has already been noted, while some farmers with flocks of the Oxford Down and Shropshire breeds of ewes are contemplating disposing of them and replacing them with Welsh cross-bred ewes which, it is felt, will not only be more prolific, but will produce smaller lambs, more suitable for winter feeding.

SOME MANAGEMENT ASPECTS OF PROFITABILITY

In an attempt to show which aspects of management are associated with relatively favourable results for winter feeding,

average figures for the ten farms with the best results per acre, and for the ten with the least favourable have been calculated.

TABLE 31

Winter-Fed Sheep. Average Results per Hogg and per Annual Acre for 10 Flocks with Best and Worst Results

Average per Hogg	Best Ten Flocks	Worst Ten Flocks
	£	£
PRODUCTION:		
Price realised by Fat Hoggs	9·26	8·64
Cost of Store Lambs	7·50	7·36
Total Production	1·76	1·28
PRODUCTION COSTS:		
(1) *Foods and Grazing:*		
(*a*) Folded Roots	1·07	1·78
(*b*) Hand-fed Foods	·20	1·39
(*c*) Grazing	·01	·01
Total	1·28	3·18
(2) Labour and Power	0·26	0·39
(3) Miscellaneous Costs	·27	·35
Total Production Costs	1·81	3·92
Margin: Deficit	0·05	2·64
	No.	No.
Number of Hoggs fed per Annual Sheep Acre	16·2	6·9
	Weeks	Weeks
Average length of feeding period	14·7	19·2
Average Results per Annual Sheep Acre	£	£
Total Production	28·6	8·8
Total Production Costs	29·4	27·1
Margin: Deficit	0·8	18·3

The average number of hoggs fed per farm is 130–135 in both groups, but the number fed per acre is much higher in the Best group, and the length of the feeding period considerably shorter.

The average price of store lambs is slightly higher for the Best group, but this is more than offset by higher returns for fat hoggetts, and production per head is nearly 10*s.* per head greater in this group. The main reason for the marked difference in the average margin per head lies, however, in differences in the relative levels of production costs in the two groups

and, although the cost of labour and miscellaneous items are both higher in the Worst group, the main difference is seen in the total cost of foods.

For every 100 hoggs fed, 6.5 acres of folded root and green fodder crops were consumed in the Best group and 8.8 acres in the Worst: the average cost of growing folded crops in the Best group where nearly 40 per cent consists of beet tops or catch crops, was £16 8*s*. 0*d*. per acre, compared with £20 4*s*. 0*d*. per acre in the Worst group where more than 90 per cent of folded crops are main-crop roots. The greatest difference between the level of food costs in the two groups lies, however, in the relative level of hand feeding. The total quantity of concentrates—mainly home-grown corn—consumed was 11 lb. per hogg in the Best group compared with 134 lb. per hogg—equal to 1 lb. per head per day over the entire feeding period—in the Worst group. There are similar differences in the quantities of hay consumed. Total hand-fed foods averaged 4*s*. per hogg in the Best group and nearly 28*s*. per head in the Worst, while total foods and grazing averaged under £1 6*s*. 0*d*. per hogg (2*s*. 1*d*. per head per week) in the former group, and nearly £3 4*s*. 0*d*. per hogg (4*s*. per head per week) in the latter group.

Quite clearly, farmers in the Worst group continued to pursue, in the winter of 1954–5, management and feeding practices to which they had become accustomed during the period of control when maximum weight increase was encouraged, a policy which is financially disastrous under the vastly changed demand conditions in the free market. A prolonged folding period, together with heavy hand feeding, has greatly increased total costs but added nothing to the average returns realised. Conversely, but equally clearly, farmers in the Best group have gone a long way to adapt their management policy to the changed economic circumstances, and, in fact, had the price of store lambs been at a more realistic level in 1954 these farms would have achieved a surplus margin of nearly £1 per hogg, or £16 per acre. The cost of folded roots has been kept at a low level by the provision of a relatively high proportion of beet tops and catch crops, while the total cost of foods per head is kept down, and excessive weight increases prevented, by heavy stocking of the root fields, a relatively shorter folding period, and a very frugal allocation of hand-fed foods. Hoggs are sold earlier, but at more economical weights, while costs are kept at the lowest possible level. Indeed, it is in this direction of lowering food costs that, under present circumstances, the secret of profitable winter feeding appears to lie.

To do this, and at the same time to permit the sheep to carry out their essential function of folding arable land, folded crops must be severely rationed to the sheep, and hand feeding kept to a bare minimum.

RESULTS FOR WINTER-FED SHEEP RE-CALCULATED AT 1956–7 PRICE LEVELS

It has already been noted that the results for winter feeding in 1954–5 were considerably distorted by the very understandable failure on the part of most winter feeders to appreciate that the type of fat hogg fostered as recently as six months previously by the Ministry of Food represented the antithesis of the type of animal readily saleable under conditions of free consumer choice, a choice which operated in the winter of 1954–5 for the first time for fifteen years.

The second winter-feeding period under free marketing, 1955–6, opened with the price of store lambs about £1 per head below the level of the previous winter, and some substantial adjustments in feeding policy no doubt occurred, especially in relation to the level of hand-fed foods. However, returns per lb. for fat hoggs were lower in 1955–6 compared with the previous winter; by approximately 16 per cent in November and December, 13 per cent in January, and 8 per cent in February and May; in March and April total returns were 4 per cent and 6 per cent higher respectively in 1956 than in the corresponding months of 1955 (See Appendix, Table J). On balance, assuming the same monthly distribution of sales as in 1954–5, the increase of £1 per head in all groups in the feeder's margin resulting from lower store lamb prices in 1955–6 is offset by lower prices for fat hoggs to the extent of approximately 12*s*. per head in the S/Winter group, 6*s*. in the Ross group and 4*s*. in the S/Spring group, but by less than 1*s*. per head in the Hereford group where a high proportion of sales occur in March and April when prices were above the 1954–5 level.

For the 1956–7 feeding period the position differs materially from both the two previous years. Store lamb prices remained at the 1955–6 level, but total returns per lb. for fat hoggs were higher for all months from November to May, with the exception of April when returns were slightly below the level of the previous year. Compared with 1954–5, average returns per lb. were lower in 1956–7 by 8 per cent in November and 4 per cent in December, but higher by 5 to 6 per cent in January and

February, by 8 per cent in March and by 4 per cent in April. The net effect of these price changes would be to increase the average returns for fat hoggs in 1956–7 compared with 1954–5 by from 4 to 6 per cent in all groups, and this increase, together with the lower cost of store lambs in 1956–7 results in a feeder's margin in the latter year higher by approximately 32*s.* per hogg in the S/Winter group, 28*s.* in the S/Spring, and 30*s.* per head in the Ross and Hereford groups.

However, production costs in 1956–7 will be materially higher, resulting mainly from increases in wage rates between the two periods. There will have been some adjustment of the inputs of hand-fed foods as a result of the experience gained in 1954–5 and, for the purpose of this calculation, it is assumed that the level of hand feeding in 1956–7 is lower by one-third in the Hereford group and by one-quarter in the Ross and S/Winter groups, all other inputs remaining at the same level as in 1954–5. Re-calculation of the 1954–5 figures at 1956–7 price levels on the basis of these assumptions yields the following results:

Group	Average per Hogg			Average per Annual Acre		
	Production	Production Costs	Surplus Margin	Production	Production Costs	Surplus Margin
	£	£	£	£	£	£
S/Winter .	2·84	2·43	0·41	34·9	29·9	5·0
S/Spring .	2·93	2·17	0·76	38·7	28·6	10·1
Ross . .	2·67	2·43	0·24	26·7	24·3	2·4
Hereford .	3·12	2·93	0·19	30·6	28·7	1·9

Although the assumptions underlying the figures calculated above are open to question in detail, there can be no doubt at all that the financial results from winter feeding were very much better in 1956–7 than in 1954–5, while the results for 1955–6 will hold an intermediate position. In 1954–5 all groups have a deficit margin ranging from approximately 10*s.* to 28*s.* per hogg: in 1956–7 there is a surplus margin of from about 4*s.* per hogg in the Hereford group to just over 15*s.* per hogg in the S/Spring group. The estimated level of production per acre is worth noting—not far short of £40 per acre in the S/Spring group and £35 per acre in the S/Winter, with margins per acre of £10 and £5 respectively.

That the winter of 1956–7 was a very favourable one for feeding is a matter of common experience among sheep

farmers, and this circumstance is no doubt reflected in the keenness of the bidding for store lambs which took place in the autumn of 1957 when, as a result, the average price paid was roughly 15*s.* per head above the level for the two previous years, and nearly back to the level of prices in the autumn of 1954. The effect of this rise in store lamb prices, assuming that returns remain the same, will be to reduce the feeder's margin by the same amount, while the increase in wage rates that occurred in October 1957 will increase the cost of shepherding during the winter-feeding period 1957–8. These two cost increases, for store lambs and for labour, will, unless the price of fat hoggs rises above the 1956–7 level in 1957–8 result in a deficit margin in all groups except the S/Spring group where costs and returns will approximately balance. To offset these increased costs the average returns per lb. for winter-fed sheep will need to increase in 1957–8 by $1\frac{1}{2}$*d.* per lb. for the S/Winter group, $2\frac{1}{4}$*d.* for the Ross group and nearly $2\frac{3}{4}$*d.* per lb. for the Hereford group. Price data for the first four months for the winter-feeding period 1957–8 do not offer much hope that these increases will be forthcoming: total returns for fat sheep were fractionally lower for November and December 1957, while provisional figures for January and February 1958 are about 4*d.* per lb. and $1\frac{3}{4}$*d.* per lb. respectively below the corresponding level in 1957. It appears therefore that unless the total returns for hoggetts during the months March–April inclusive is several pence per lb. above the 1957 level, and 5*d.* to 6*d.* per lb. above the level for January 1958, there will be a loss incurred in the winter feeding of sheep in 1957–8.

An interesting aspect of winter feeding since decontrol is the variation in the results that has occurred from year to year. Heavy losses in the transitional period 1954–5 were followed by a marked increase in the feeder's margin in 1955–6, as a result of lower store lamb prices in that year, while a further improvement in 1956–7 took place following upon higher returns for fat hoggs. In the current winter-feeding period, 1957–8, the prospect is once again for low or negative profits due to an increase in the price of store lambs and, up to February 1958 at least, to lower returns. Over this period of four years, relative monthly prices have fluctuated appreciably from year to year without any discernible trend, with the result that different monthly patterns of sales of hoggets will have shown very variable movements in the average returns realised from year to year, and even resulted in opposed trends in the same year.

The Sheep Enterprise, 1954–5

In this section the results for the two branches of the sheep enterprise, the Breeding Flocks and the Winter Root-Fed Sheep, are brought together to give the overall results for the Sheep Enterprise as a whole. Although this forms the basis on which sheep are, in fact, integrated into the farming system, and on which the success or otherwise of the enterprise is necessarily judged by the farmer concerned, results for the enterprise as a whole offer very limited scope for analysis. Results for individual farms and groups depend to a very considerable degree upon the extent to which winter feeding is practised, and the proportion of winter-fed hoggs to breeding ewes not only varies between different groups but also exhibits considerable variation between farms in the same group. A further result of these differences in the relative importance of the two sections of the enterprise is that, for comparative purposes, data can be presented only on the basis of the farm area utilised by sheep.

The average number of each class of sheep on hand at the beginning of the investigation is set out for each group of farms in Table 32, together with the number of lambs reared per farm.

TABLE 32.

Sheep Enterprise. Numbers of Sheep on Hand at the Commencement of the Investigation, October, 1954, and Number of Lambs Reared in 1955

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
Number of Farms	9	15	15	11	17
Average Number per Farm	No.	No.	No.	No.	No.
(*a*) Breeding Ewes	150	125	176	149	128
(*b*) Followers	21	23	32	6	12
(*c*) Hoggs for winter feeding	24	48	101	168	174
Number of Lambs Reared	177	132	197	189	169

In each of the Somerset groups, breeding ewes and followers combined outnumber hoggs kept for winter-feeding—by seven to one in the S/Autumn group, three to one in the S/Winter and by two to one in the S/Spring group: in both the Ross and Hereford groups feeding sheep outnumber the breeding flock.

TABLE 33

Sheep Enterprise 1954–5. Acreage Devoted to Sheep; Average Annual Acres per Farm and as Per Cent of Total Sheep Acreage

	Somerset						Herefordshire			
	Autumn		Winter		Spring		Ross		Hereford	
	Per Farm	Per cent	Per Farm	Per cent	Per Farm	Per cent	Per Farm	Per cent	Per Farm	Per cent
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
(1) Folded Roots										
(*a*) Main crop	13·1	23·4	8·6	14·9	15·9	16·4	12·3	15·5	10·9	12·5
(*b*) Catch crop	5·0	9·0	4·0	6·8	2·3	2·4	1·3	1·7	·9	1·0
(*c*) Beet tops	1·2	2·1	1·0	1·7	—	—	2·7	3·4	·9	1·1
Total	19·3	34·5	13·6	23·4	18·2	18·8	16·3	20·6	12·7	14·6
(2) Home-Grown Hand-fed Foods	4·9	8·8	4·2	7·2	4·3	4·4	8·4	10·6	13·3	15·3
(3) Grazing	31·8	56·7	40·2	69·4	74·5	76·8	54·3	68·8	61·0	70·1
Total	56·0	100·0	58·0	100·0	97·0	100·0	79·0	100·0	87·0	100·0

Table 33 sets out the average acreage per farm utilised by sheep, while Table 34 shows how the overall acreage utilised is allocated between the Breeding Flocks and the Winter-fed Sheep.

The total annual acreage utilised by sheep averaged 56–58 acres per farm in the S/Autumn and Winter groups, 97 acres in the S/Spring group, 79 in the Ross group and 87 annual acres per farm in the Hereford group. The proportion of the total sheep acreage represented by folded roots varies from 35 per cent in the S/Autumn group to below 15 per cent in the Hereford group, and home-grown hand-fed foods from over 15 per cent in the Hereford group to less than 5 per cent in the S/Spring group: the former group is the only one in which the acreage of hand-fed foods exceeds that of folded roots. Grazing accounts for just under 57 per cent of the total sheep acreage in the S/Autumn group, but for nearly 77 per cent in the

TABLE 34.

Sheep Enterprise, 1954–5. Per Cent of Total Farm Area Devoted to Breeding Flock, Winter-Fed Fat Hoggs and the Sheep Enterprise

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
Annual Sheep Acres: Average per farm	Acres 56	Acres 58	Acres 97	Acres 79	Acres 87
Acreage devoted to sheep as percentage of Total Farm Area of:	%	%	%	%	%
(1) Tillage:					
(*a*) Breeding Flock	14·4	14·0	12·1	4·8	3·5
(*b*) Fat Hoggs	2·6	6·4	7·5	10·7	13·2
(*c*) Sheep Enterprise	17·0	20·4	19·6	15·5	16·7
(2) Hay:					
(*a*) Breeding Flock	6·1	4·8	3·7	6·4	11·2
(*b*) Fat Hoggs	·6	·8	1·2	7·7	7·7
(*c*) Sheep Enterprise	6·7	5·6	4·9	14·1	18·9
(3) Grazing:					
(*a*) Breeding Flock	22·7	27·6	44·1	36·2	38·5
(*b*) Fat Hoggs	·1	·3	·3	·3	·2
(*c*) Sheep Enterprise	22·8	27·9	44·4	36·5	38·7
(4) Total Acreage:					
(*a*) Breeding Flock	17·4	20·1	28·1	19·8	22·2
(*b*) Fat Hoggs	1·3	2·5	2·9	5·9	6·0
(*c*) Sheep Enterprise	18·7	22·6	31·0	25·7	28·2
Per Cent of Total Sheep Acreage devoted to:					
(*a*) Breeding Flock	92·9	89·1	90·6	76·9	78·8
(*b*) Fat Hoggs	7·1	10·9	9·4	23·1	21·2
(*c*) Sheep Enterprise	100·0	100·0	100·0	100·0	100·0

S/Spring group; in the remaining three groups the corresponding proportion lies between 68 and 70 per cent.

The total acreage devoted to the sheep enterprise represents under 19 per cent of total farm area in the S/Autumn group, some 23 per cent in the S/Winter group, 26 to 28 per cent in the two Herefordshire groups and 31 per cent of total farm area in the S/Spring group. Of the total area of tillage on the farms the sheep enterprise absorbed between 15 and 21 per cent in all groups, while, of the acreage of tillage devoted to sheep, the Breeding Flock utilised a far greater proportion than the winter fed sheep in all three Somerset groups; in the case of the two Herefordshire groups however the position is reversed, the feeding sheep absorbing more than two-thirds of the total tillage area devoted to the sheep enterprise. In the case of grazing, almost all of which is accounted for by the Breeding Flocks, sheep absorb approximately 23 per cent of the total farm area of grazing in the S/Autumn group, 28 per cent in the S/Winter, 37 to 39 per cent in the Ross and Hereford groups and 44 per cent in the S/Spring group. The proportion of the total farm area devoted to all sheep that is accounted for by the Breeding Flock is between 89 and 93 per cent in the Somerset groups, but only 77 to 79 per cent in the Herefordshire groups where the winter-fed hoggs absorb more than one-fifth.

PRODUCTION

The level of Total Production per acre tends to vary directly with the density of stocking of the sheep acreage and inversely with the proportion of the sheep acreage that is devoted to winter-fed sheep. Density of stocking is highest in the S/Autumn group where arable crops play a much more important part in providing sheep keep than in other groups, while the extent to which winter feeding of hoggs is undertaken is slight in this group, with the result that total production at nearly £27 per annual acre is more than £7 per acre higher than in the next highest group, this being the S/Winter group where a relatively high density of stocking is combined with a moderate level of winter feeding. In the three remaining groups, where total production is around £16–£17 per acre, either the proportion of winter feeding is high, as in the Ross and Hereford groups, or the level of stocking is low, as in the S/Spring group where the system of sheep management is relatively less intensive and based more upon grassland than in the other groups.

TABLE 35.

Sheep Enterprise. Production, Production Costs and Margin, Average per Annual Sheep Acre, 1954–5

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
Production:	£	£	£	£	£
Sales of Sheep	31·19	18·61	16·13	28·24	22·34
Closing Valuation	35·68	29·86	26·98	25·45	25·38
	66·87	48·47	43·11	53·69	47·72
Purchase of Sheep	7·99	4·01	3·89	8·49	7·58
Opening Valuation	37·31	29·61	26·25	31·39	26·70
	45·30	33·62	30·14	39·88	34·28
Production of Sheep	21·57	14·85	12·97	13·81	13·44
Sales of Wool	5·24	4·74	3·87	3·49	3·01
Total Production	26·81	19·59	16·84	17·30	16·45
Production Costs:					
(1) *Foods and Grazing:*					
(*a*) Folded Roots	6·27	4·09	3·38	3·56	3·00
(*b*) Hand-fed Foods:					
(i) Purchased	2·70	1·10	0·17	0·53	0·50
(ii) Home-grown	2·39	2·10	1·03	2·41	3·66
Total	5·09	3·20	1·20	2·94	4·16
(*c*) Grazing	2·80	3·41	3·03	2·76	2·66
Total Foods and Grazing	14·16	10·70	7·61	9·26	9·82
(2) *Labour and Power:*					
(*a*) Manual labour	4·97	3·68	2·58	2·51	2·50
(*b*) Contract Work	·03	·06	·01	·01	·10
(*c*) Power	·43	·37	·13	·15	·19
Total	5·43	4·11	2·72	2·67	2·79
(3) *Miscellaneous Costs:*					
(*a*) Marketing Expenses	0·66	0·35	0·31	0·56	0·45
(*b*) Other	1·12	·98	·60	1·11	·96
Total	1·78	1·33	0·91	1·67	1·41
Total Production Costs	21·37	16·14	11·24	13·60	14·02
Margin: Surplus	5·44	3·45	5·60	3·70	2·43

SALES OF FAT SHEEP. METHOD OF DISPOSAL

Sales of fat sheep took place through three different channels; two, by auction and via the Fatstock Marketing Corporation are of major importance, and one, by private sale, of minor importance.

TABLE 36

Method of Disposal of Fat Sheep. All Somerset Groups and all Herefordshire Groups

	Somerset	Herefordshire
	%	%
Fat Hoggs:		
F.M.C.	37·9	47·4
Auction.	60·7	48·0
Private	1·4	4·6
Total	100·0	100·0
Fat Lambs:		
F.M.C.	24·2	38·5
Auction.	58·0	58·6
Private	17·8	2·9
Total	100·0	100·0

For all Somerset groups combined a total of 2,660 fat hoggs were sold between November 1954 and May 1955, and 4,890 over the same period for the two Herefordshire groups. Of these, just over 60 per cent went to local fatstock markets and 38 per cent to the Fatstock Marketing Corporation from the Somerset farms, compared with 48 per cent and 47 per cent respectively for the Herefordshire groups. One farm in Somerset and four in Herefordshire sold some or all of their fat hoggs privately to wholesale butchers, but even in Herefordshire, sales through this outlet accounted for less than 5 per cent of total sales of fat hoggs, and the great bulk of these originated from two farms when all hoggs were retained until the roots were finished and then sold in one single transaction. Sales of this type are effected on the farm concerned, and are either made on a deadweight basis or on an agreed price per head. Although the sample of farms concerned is small, prices received were no less favourable for this method of sale than those for the more common methods of disposal, while marketing costs are nil.

Fat lambs sold from farms in the Somerset groups between February and October 1955 totalled 2,270, of which 58 per

cent went to local auctions, 24 per cent to the Fatstock Marketing Corporation and nearly 18 per cent were sold privately: of the 1,240 fat lambs sold from the Herefordshire groups, nearly 60 per cent went via the auction market, under 40 per cent to the F.M.C. and 3 per cent were sold privately. These private sales in the Herefordshire groups were limited to two farms, and represent regular weekly sales to local butchers; in the Somerset groups six farms made private sales of fat lambs, the great majority of which were sales to wholesale butchers of early fat lambs during the months of February to May. In both counties the F.M.C. was relatively more favoured as an outlet for fat hoggs than for fat lambs, but, whereas in the Herefordshire groups the auction markets gained at the expense of F.M.C. for fat lamb sales, in the Somerset groups sales were diverted mainly to wholesale butchers. On the basis of total sales of fat sheep the F.M.C. was relatively more popular in Herefordshire, where 46 per cent of fat hoggs and lambs combined went through this channel compared with a corresponding figure of 32 per cent for the Somerset farms, while, of the total of over 11,000 fat lambs and hoggs sold from all groups in the two counties combined, 54·3 per cent went through local auctions, 39·3 per cent to the F.M.C. and 6·4 per cent were sold privately.

The relative prices realised through the two main channels of disposal were then, and still are now, matters of considerable interest and importance to fatstock producers. In order to make a valid comparison of returns through the two channels a number of conditions must be fulfilled: the sales of sheep compared must be for similar types of sheep; the sales must be for the same time of year; the sheep sold must fall within a fairly narrowly restricted weight range, and there must be an adequate number of sheep sold by each method. Data available from this investigation have been examined, and a number of cases which meet the above requirements extracted. The figures are set out below in Table 37, and provide nine comparisons for fat hoggs and five for fat lambs: the minimum number of sales by each method of sale for each comparison is 100 in the case of fat hoggs, and 50 in the case of fat lambs.

Of the nine comparisons for fat hoggs, seven show higher returns per lb. for sales through auction markets, while two favour sales to F.M.C., although, in one of these cases, the difference is negligible. For February sales the returns were higher by auction by approximately $\frac{3}{4}d.$ to $1d.$ per lb. in all weight groups, equal to $4s.$ to $6s.$ per hogg: for March, average

TABLE 37.

Total Returns per lb. E.d.c.w. and per Head for Fat Hoggs and Lambs Sold by Auction and to Fatstock Marketing Corporation, 1955

	Weight Range	Auction Sales			Sales to F.M.C.		
		Average Weight per Head	Total Returns*		Average Weight per Head	Total Returns*	
			Per lb.	Per head		Per lb.	Per head
Fat Hoggs	lb.	lb.	d.	£	lb.	d.	£
February 1955	48 – 56	54·4	39·5	8·97	52·9	38·8	8·54
,,	56 – 66	60·6	37·2	9·39	60·8	36·1	9·16
,,	66 – 76	70·6	32·0	9·41	69·8	31·3	9·10
March	48 – 56	53·8	37·4	8·39	52·3	37·9	8·25
,,	56 – 66	61·2	35·6	9·07	60·1	34·9	8·74
,,	66 – 76	70·4	32·2	9·45	70·1	32·3	9·43
April	40 – 48	45·2	45·2	8·51	45·2	41·7	7·85
,,	48 – 56	53·3	41·2	9·15	52·4	37·5	8·18
,,	56 – 66	59·1	39·3	9·68	60·8	35·6	9·01
Fat Lambs							
April 1955	40 – 48	45·0	48·6	9·11	44·1	46·9	8·61
May	Under 40	36·3	51·2	7·74	35·9	46·4	6·94
,,	40 – 48	44·2	45·4	8·36	43·8	45·0	8·21
September	48 – 56	50·2	33·3	6·97	52·6	32·3	7·08
October	40 – 48	44·8	34·8	6·48	44·9	33·5	6·28

* Total Returns include all Guarantee Payments.

total returns were approximately $\frac{1}{2}d.$ per lb. higher through F.M.C. for hoggs within the range 48–56 lb. deadweight, but higher by auction for those in the 56–66 lb. weight range. In April 1955, a sharp increase in the average price paid in local auction markets occurred, especially in Herefordshire, a price increase which does not however appear to have been general over the country as a whole, and, as a result, total returns from sales by auction leapt ahead of F.M.C. prices by about $3\frac{1}{2}d.$–$3\frac{3}{4}d.$ per lb. for all weight groups, differences which are equal to approximately 13*s.* per head on a 45 lb. hogget, 16*s.* for a 52 lb., and 18*s.* 6*d.* per head for a 60 lb. hogget.

Of the five comparisons made for fat lambs, total returns favour sales by auction in all cases by, on average, about 1*d.* per lb. except for lambs sold in May at under 40 lb. deadweight when the difference is over $4\frac{3}{4}d.$ per lb.—roughly 15*s.* per lamb —in favour of the local auction market. Generally speaking however, it would appear that total returns, both for fat lambs and fat hoggs, were about 1*d.* per lb. higher on average for sales by auction than for sales through the F.M.C. Higher

returns from auction sales are, however, offset by higher marketing costs. Compared with the standard charge of 3*s.* per head made by F.M.C. for transport and marketing, the average cost of transport to auction markets was 10*d.* per head, while market tolls etc., added 2*d.* per head to this figure. Auctioneer's commission, normally 4*d.* per £1 at that time, varies according to the price realised.

Total returns and marketing expenses for sales by auction would therefore appear typically as follows:

Average per Head

	RETURNS			MARKETING		
	Auction Price	Guarantee Payments	Total Returns	Transport and Tolls	Auctioneers' Commission	Total
	£	£	£	s. d.	s. d.	s. d.
Fat Hoggs Sold Feb./Mar. 1955:						
54 lb. E.d.c.w.	7·90	0·80	8·70	1 0	2 8	3 8
60 „ „ .	8·32	0·88	9·20	1 0	2 9	3 9
70 „ „ .	8·38	1·02	9·40	1 0	2 10	3 10
Fat Lambs Sold Sept./Oct. 1955:						
45 lb. E.d.c.w.	6·01	0·47	6·48	1 0	2 0	3 0
50 „ „ .	6·45	0·52	6·97	1 0	2 2	3 2

In the case of fat hoggs, total direct costs of marketing by auction vary from 3*s.* 8*d.* to 3*s.* 10*d.* per head, i.e. 8*d.* to 10*d.* above the corresponding F.M.C. charge: for fat lambs sold off grass in September–October the prices realised, and hence the auctioneers' commission, are lower; total marketing costs average 3*s.* per head for a 45 lb. lamb—the same as the F.M.C. charge—and 3*s.* 2*d.* for a 50 lb. lamb.

Assuming that total returns per lb. for fat sheep are, on average, 1*d.* per lb. higher for auction sales, the net advantage after deducting the extra direct costs of marketing for sales by auction would be: 3*s.* 10*d.* per head for a 54 lb. hogg and 5*s.* for a 70 lb. animal, while for fat lambs the corresponding figures are 3*s.* 9*d.* for a 45 lb. and 4*s.* for a 50 lb. carcase. These figures, related to total sales of 100 animals, give an advantage to auction sales of approximately £19 to £25 for fat hoggs, and £19 to £20 per 100 head sold for fat lambs.

Several points however need to be noted about these figures. In the first place auction prices at any given period are by no means uniform over the country as a whole, and the relationship between auction returns and F.M.C. prices found in Somerset and Herefordshire will not necessarily hold for other areas. Secondly, these figures relate to 1954–5, the first year of operation of the F.M.C.; the position may well be different now that this organisation is firmly established, with a fund of experience to draw upon. And thirdly, only direct marketing costs have been taken into account: for sales through F.M.C., once collection of the animals from the farm has taken place no further expense is incurred, but the great majority of farmers selling through the auction ring will feel it necessary to attend in person when the animals are sold. Often this visit to market may be necessary for other reasons, but additional expense is incurred which may be appreciable if, in fact, the visit is necessitated solely by the need to be present when fatstock are auctioned. On the other hand, there is always the possibility with sales through auctions that if grading or price appear unfavourable the stock can be withdrawn, a possibility which does not exist when sales are made through the F.M.C. All in all, when these indeterminate indirect costs of marketing through the auction ring are taken into account it appears that there is probably but little to choose from an economic point of view between the two methods of marketing fat sheep: there will be occasions when price movements in local markets are out-of-line with general trends in the country as a whole, and some fairly substantial temporary advantage may emerge for one or other market outlet. Again, for some specific class of fat sheep, such as out-of-season fat lamb, there may be a definite advantage in selecting one rather than the other method of selling, although, in this instance, in 1955, the best outlet was neither the F.M.C. nor the auction ring, but the wholesale butcher.

INCIDENCE OF DEATHS AMONG SHEEP

Relative levels of production are affected, though not to any very great extent except where exceptional losses are involved, by the incidence of deaths among sheep.

Deaths among ewes and lambs occur most commonly at or shortly after lambing, and losses were lower for ewes, and markedly so for lambs, in the autumn-lambing group which enjoyed very good weather conditions at lambing. For spring-lambing flocks, total deaths among ewes over the year averaged

TABLE 38.

Sheep Enterprise: 1954–55. Deaths During the Year Among Various Classes of Sheep

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
Per cent of numbers at beginning of the investigation:	%	%	%	%	%
(*a*) Breeding ewes	5·5	7·0	7·3	8·5	7·1
(*b*) Rams	10·0	5·1	7·8	9·1	10·4
(*c*) Followers	0·1	1·3	1·9	1·5	—
(*d*) Winter-fed Hoggs	1·4	2·1	2·1	1·2	1·7
Lambs: *Per cent of total born:*					
(*a*) Born dead	6·4	6·5	8·4	7·2	5·9
(*b*) Birth to Weaning	2·6	9·1	6·5	7·7	5·2
(*c*) Post-weaning	0·1	0·8	0·7	1·1	2·2
Total deaths	9·1	16·4	15·6	16·0	13·3
Per cent of total Lambs born alive:					
(*a*) Birth to Weaning	2·8	10·4	7·1	8·4	5·5
(*b*) Post-weaning	0·1	0·8	0·7	1·1	2·4
Total	2·9	11·2	7·8	9·5	7·9

TABLE 39.

Sheep Enterprise, 1954–55. Average Quantities of Foods Consumed per Farm

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
Folded Roots. Actual Acres:	Acres	Acres	Acres	Acres	Acres
(1) Main Crop	13·1	8·6	15·9	12·3	10·9
(2) Catch Crop	9·9	7·6	4·5	2·5	2·0
(3) Beet Tops	3·3	2·9	—	8·0	2·8
Total	26·3	19·1	20·4	22·8	15·7
Hand-Fed Foods:	cwt.	cwt.	cwt.	cwt.	cwt.
(1) Purchased Concentrates	114	38	8	36	41
(2) Home-grown:					
(*a*) Corn	73	54	52	114	172
(*b*) Hay	109	85	75	222	360
(*c*) Roots, etc.	715	748	492	459	933
Total Annual Sheep Acres	Acres 56	Acres 58	Acres 97	Acres 79	Acres 87

around 7–8 per cent; for lambs, 13 to 16 per cent of total lambs born were either born dead or died during the year, and 7–10 per cent of those born alive died during the ensuing seven to eight months.

FOODS CONSUMED

The total quantities of foods consumed per farm by the numbers of sheep shown in Table 32 is set out in Table 39.

Noteworthy features of this table relate to the consumption of purchased concentrates in the S/Autumn group—not far short of 6 tons per farm on average although a considerable proportion consists of dried beet pulp—and the large amount of home-grown corn, hay, and hand-fed roots fed to sheep in the Hereford and, to a lesser extent, in the Ross group.

MANUAL LABOUR

The monthly distribution of total annual labour requirements for the Sheep Enterprise is set out in Table 40.

Total labour requirements, both per sheep acre and per farm, are highest in the S/Autumn group: man-hours per acre are next highest in the S/Winter group, while the three spring-lambing groups all have closely comparable total labour requirements per acre which are, however, at a distinctly lower level than for the earlier lambing groups.

The distribution of labour requirements over the year shows some marked differences between the groups. One of the outstanding features of the table is the very level pattern of labour requirements throughout the winter period in the S/Autumn group, a pattern which contrasts sharply with the spring-lambing groups which show a marked concentration in the period January to March when labour requirements account for 40–42 per cent of the annual total. It is not, of course, possible to say what constitutes the optimum distribution of labour requirements for sheep without a knowledge of the overall regular and seasonal labour force of the farm, and the seasonal requirements of other enterprises. Certainly a level pattern of labour requirements through the winter months is not necessarily desirable. On the contrary, on most of these farms the early part of the winter finds the labour force fully engaged upon harvesting roots etc., while at the end of the period the spring cultivations will have first priority: between these two periods the labour force is likely to be relatively slack, and productive work provided by sheep at this time makes a valuable contribution to the evening-out of labour

TABLE 40

Sheep Enterprise 1954–5. Average Number of Man-Hours per Annual Sheep Acre per Month; and as Per Cent of Total for the Year

	Somerset						Herefordshire			
	Autumn		Winter		Spring		Ross		Hereford	
	Hours	Per cent	Hours	Per cent	Hours	Per cent	Hours	Per cent	Hours	Per cent
October	3·24	10·6	1·25	5·4	0·71	4·5	0·78	5·1	0·71	4·6
November	3·35	10·9	1·53	6·6	·82	5·2	·89	5·8	1·08	7·1
December	3·22	10·5	2·19	9·5	·93	5·9	1·11	7·2	1·30	8·5
January	3·25	10·6	3·58	15·5	1·26	8·0	1·58	10·3	1·60	10·5
February	3·11	10·2	2·52	10·9	2·59	16·4	2·09	13·6	1·78	11·7
March	3·31	10·8	2·56	11·1	2·51	15·9	2·51	16·3	3·01	19·7
April	2·37	7·7	1·89	8·2	1·42	9·0	1·24	8·1	1·42	9·3
May	1·87	6·1	1·66	7·2	1·13	7·1	·96	6·3	1·06	6·9
June	2·48	8·1	2·37	10·2	1·91	12·1	1·83	11·9	1·28	8·4
July	1·67	5·5	1·32	5·7	·98	6·2	·91	5·9	·82	5·4
August	1·37	4·5	1·17	5·1	·76	4·8	·72	4·7	·58	3·8
September	1·39	4·5	1·07	4·6	·78	4·9	·73	4·8	·62	4·1
Year	30·63	100·0	23·11	100·0	15·80	100·0	15·35	100·0	15·26	100·0
Total man-hours per Farm per Year	1,715		1,340		1,533		1,213		1,327	

requirements on the farm as a whole. On the other hand, heavy labour requirements for sheep throughout March and April such as are encountered in the Hereford group, and to a lesser extent in the Ross and S/Spring groups, can be a considerable disadvantage owing to the conflict which may occur with the overriding needs of the spring cultivations. During the summer months, apart from washing and shearing in May–June which may clash badly with sugar beet and root hoeing in some seasons, labour requirements are low for sheep, and there is normally little difficulty in meeting them.

In Table 41 the monthly distribution of labour hours for the Breeding Flock, the Winter-fed hoggs and for the Sheep Enterprise as a whole are shown for the two Herefordshire groups

TABLE 41.

Monthly Labour Requirements for Winter-fed Hoggs, Breeding Flocks and Sheep Enterprise. Ross and Hereford Groups Combined

	Man Hours per Annual Acre			Per Cent of Total for Year		
	Winter-fed Hoggs	Breeding Flock	Sheep Enterprise	Winter-fed Hoggs	Breeding Flock	Sheep Enterprise
	Hrs.	Hrs.	Hrs.	%	%	%
October . .	0·44	0·30	0·74	10·6	2·7	4·8
November .	·66	·34	1·00	16·0	3·1	6·5
December .	·73	·47	1·20	17·6	4·2	7·8
January . .	·83	·76	1·59	20·2	6·8	10·4
February. .	·65	1·25	1·90	15·9	11·2	12·4
March . .	·59	2·22	2·81	14·4	19·9	18·4
Winter Six Months .	3·90	5·34	9·24	94·7	47·9	60·3
April . .	·19	1·16	1·35	4·5	10·3	8·8
May . .	·03	1·02	1·05	·8	9·1	6·9
June . .	—	1·50	1·50	—	13·4	9·8
July . .	—	·85	·85	—	7·6	5·6
August . .	—	·64	·64	—	5·7	4·2
September .	—	·67	·67	—	6·0	4·4
Summer Six Months .	0·22	5·84	6·06	5·3	52·1	39·7
Year . . .	4·12	11·18	15·30	100·0	100·0	100·0

combined. These groups have been chosen as they are the only ones in which all farms carry a breeding flock and a flock of winter-fed hoggs, and the figures shown in Table 41 represent

the typical labour distribution for a system of management in which a breeding flock, lambing in the spring, is maintained to produce store lambs for feeding out on roots during the winter months. For all three sections in the table, monthly labour requirements are calculated per acre devoted to the whole Sheep Enterprise.

For the breeding flocks alone, less than one-half of total annual labour requirements fall in the winter six months, but the addition of the fat hoggs, nearly 95 per cent of whose requirements fall in the winter, raises the proportion for the sheep enterprise as a whole to over 60 per cent in the winter period: of total requirements for the Sheep Enterprise the fat hoggs account for 42 per cent during the winter period, but for less than 4 per cent in the summer.

THE EFFECT OF SIZE OF ENTERPRISE UPON LABOUR REQUIREMENTS

In the three spring-lambing groups, the S/Spring, Ross and Hereford groups, the system of sheep management is broadly similar, and in each of these groups the average number of man hours required is between 15 and 16 per annual acre per year. If the results for all farms in these three groups are combined, and analysed according to the size of the Sheep Enterprise, measured in terms of the farm acreage devoted to sheep, the following figures emerge.

Annual Sheep Acres per Farm

	Under 50 acres	50–75 acres	75–100 acres	Over 100 acres
Number of Farms:	9	9	13	14
Average number of Annual Sheep Acres per farm: . . .	35	63	86	142
Man hours per Annual Sheep Acre: . .	22·3	18·5	14·7	13·8
Index: . . .	100	83	66	62

The smallest enterprises, with less than 50 annual acres per farm devoted to sheep, had a labour requirement of over 22 man hours per acre, but a rapid decrease occurs with increasing size of enterprise and, for farms with 75–100 sheep acres, labour requirements are approximately one-third lower: further increases in the size of enterprise however yield relatively slight gains in labour economy.

Difficulty in obtaining adequately trained and sufficiently interested labour to undertake shepherding is a problem occupying the attention of a number of farmers concerned with this investigation. Most commonly the problem is overcome by the farmer himself, or his son, undertaking the routine shepherding, and not infrequently this is a matter of choice rather than necessity. Of the forty-one farms included in the three Somerset groups, in 29 cases—70 per cent of the total—the farmer (or his son) undertook routine shepherding, compared with 14 farms out of a total of 29, i.e. less than 50 per cent, for the two Herefordshire groups. On the remaining farms, which carry most of the larger flocks, a paid employee was responsible for routine attention to sheep. There were only two full-time shepherds—both in Somerset—among the 70 flocks investigated, and the 25 part-time shepherds in both groups combined fall into two categories. Of the 10 part-time shepherds in the Somerset groups, and of the 15 in the Herefordshire groups, 8 and 12 respectively were employed as shepherds i.e. they receive a premium or bonus in respect of special responsibilities with sheep: on the remaining two farms in Somerset and three in Herefordshire the employee responsible for routine shepherding undertook this work as part of his general duties, without any special financial recognition.

For flocks of comparable size there is no difference, during the winter months, between the time taken about the sheep by part-time employee shepherds and farmer-shepherds: during the summer months however the time spent on sheep is nearly 20 per cent lower where the shepherding is undertaken by the farmer himself. No doubt, during the busy season when the farmer has many urgent calls on his time and attention there will be a very understandable tendency to cut back the time he spends with the sheep to the bare minimum; on the other hand there may be an equally understandable disinclination on the part of the part-time shepherd to reduce the time spent on sheep too drastically, so that he may enjoy their company a little longer in good weather as some recompense for the time spent attending to their needs in all types of weather during the winter months.

MISCELLANEOUS COSTS

A summary of Miscellaneous Costs per annual acre is set out in Table 42, while Appendix Table M gives this data in greater detail on a per farm basis.

TABLE 42.

Sheep Enterprise, 1954–55. Miscellaneous Costs: Average Cost per Annual Sheep Acre

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
	£	£	£	£	£
(1) Sheep Equipment:					
(*a*) Depreciation	0·59	0·44	0·23	0·43	0·50
(*b*) Repairs	·07	·04	·04	·06	·10
Total	0·66	0·48	0·27	0·49	0·60
(2) Veterinary Fees, Medicines, etc.:					
(*a*) Vet. Fees	0·02	0·04	0·02	0·08	0·03
(*b*) Medicines, drenches, etc.	·16	·22	·15	·28	·17
Total	0·18	0·26	0·17	0·36	0·20
(3) Dips, Sprays, etc.	0·21	0·18	0·12	0·18	0·13
(4) Minerals, Salt Licks, etc.	·03	·01	·01	·05	·01
(5) Marketing Expenses:					
(*a*) Transport	0·17	0·08	0·07	0·10	0·11
(*b*) Commission, F.M.C., tolls, etc.	·49	·27	·24	·46	·34
Total	0·66	0·35	0·31	0·56	0·45
(6) Sundries	0·04	0·05	0·03	0·03	0·02
Total Miscellaneous Costs	1·78	1·33	0·91	1·67	1·41

Depreciation and repairs of sheep equipment, together with marketing expenses, account for approximately three-quarters of total miscellaneous costs in the S/Autumn and Hereford groups, and for two-thirds in the other three groups. Veterinary fees and medicines etc. tend to be rather higher in the Ross group, but sheep are not a class of livestock for which many calls are normally made on the Vet., and average fees paid for this service exceed £3 per farm only in the Ross group.

Total miscellaneous costs are highest in the S/Autumn group, where depreciation of equipment and marketing expenses per acre are both above average; next in order is the Ross group where the cost of veterinary fees and medicines is relatively heavy, and where the cost of marketing is also above average. Total costs are lowest in the S/Spring group.

The average valuation, per annual acre, for specific sheep equipment is shown in Table 43, and in a more extended form, on a per farm basis, in Appendix Table N. The valuation of equipment is made on a realisation value basis i.e. it is the value which equipment could reasonably be expected to fetch if sold at the time the valuation was made.

The average valuation of sheep equipment ranges from just over 31*s.* per annual acre in the S/Spring group to nearly 80*s.* in the S/Autumn: folding gear accounts for 43 to 50 per cent of the total in all groups except the S/Autumn where the proportion is as high as 65 per cent. The total valuation per farm is approximately £150 to £170 in the S/Winter and S/Spring groups, £220–£230 in the S/Autumn and Ross groups, and over £290 per farm in the Hereford group.

A typical set of folding gear for farms in the S/Autumn group consists of 20 rolls of netting, 130 hurdles, nearly all of which are iron, and about 200 stakes equally divided between wooden and iron ones. In the S/Winter group rolls of netting are fewer, about 16 per farm, and under 100 hurdles, the great majority of which are, in this case, of wood or wattle, together with 200 stakes, two-thirds of which are of wood. In the S/Spring group folding is undertaken almost exclusively with netting—18 rolls per farm—with which go 250 stakes, two-thirds of which are wood. The few hurdles found on the farms in this group—about 20 to 30 per farm—are used almost entirely for mustering the flocks. In the Ross and Hereford groups about 14 rolls of wire are employed per farm, and about 120 hurdles, virtually all of which are iron. These iron hurdles are something of a phenomenon: purchased originally anything up to 50 years ago at about 2*s.* 6*d.* each they now regularly fetch if in good condition, up to £1 apiece at farm sales, while a repair to them currently costs 4*s.* to 8*s.* a time at the blacksmiths.

The average valuation for netting is 35*s.* to 40*s.* per roll, 5*s.* to 12*s.* apiece for wood or wattle hurdles, while iron hurdles are valued at an average of 15*s.* to 17*s.* each. Wooden stakes average 3*d.* to 6*d.* each and iron ones 2*s.* 3*d.* to 3*s.* Apart from the more usual methods of folding three farms, one in each of the S/Winter, S/Spring and Ross groups, were using electric fencers for this purpose.

Equipment used for hand feeding consists mainly of feeding troughs and hay racks. There were, typically, rather more than 20 troughs per farm in the S/Autumn group, 18 in the Hereford

TABLE 43

Sheep Enterprise, 1954–5. Average Value of Sheep Equipment per Annual Sheep Acre

	Somerset						Herefordshire			
	Autumn		Winter		Spring		Ross		Hereford	
	Per Acre	Per cent	Per Acre	Per cent	Per Acre	Per cent	Per Acre	Per cent	Per Acre	Per cent
	£	%	£	%	£	%	£	%	£	%
Folding Gear										
(*a*) Netting	0·56	14·1	0·53	17·9	0·34	21·7	0·37	12·8	0·32	9·6
(*b*) Hurdles	1·81	45·7	·72	24·2	·14	8·9	·80	27·8	1·04	31·0
(*c*) Stakes	·21	5·3	·20	6·7	·18	11·5	·13	4·5	·10	3·0
(*d*) Electric fences	—	—	·02	0·7	·02	1·2	·02	·7	—	—
Total	2·58	65·1	1·47	49·5	0·68	43·3	1·32	45·8	1·46	43·6
Feeding Troughs	·53	13·4	·52	17·5	·34	21·7	·51	17·7	·56	16·7
Shearing Gear	·25	6·3	·45	15·2	·28	17·8	·32	11·1	·31	9·3
Miscellaneous	·60	15·2	·53	17·8	·27	17·2	·73	25·4	1·02	30·4
Total	3·96	100·0	2·97	100·0	1·57	100·0	2·88	100·0	3·35	100·0

group and 14 in each of the remaining groups: in all cases the great majority are iron troughs with an average value of 50*s.* to 55*s.* apiece. Hay racks number about 6 per farm in the Hereford group, 3 to 4 in the S/Autumn and Ross groups, and 2 per farm in the other two Somerset groups, with an average value of about £10 each. And finally there is the shepherd's hut, that fast disappearing symbol of an earlier order of things when the whole farm revolved round the shepherd and his sheep. Of the seventy farms in this investigation only seventeen, eleven of which are in the two Herefordshire groups, still possess a shepherd's hut. Very few, if indeed any, of these huts still fulfil their primary purpose of housing the shepherd; at most they serve him as a temporary shelter, while their main function is that of a mobile storehouse for fodder and for those pieces of equipment and stores of a pharmaceutical nature which play an ever increasing part in modern sheep husbandry. The valuation of these shepherd's huts varied from between £40–£50 each for three huts maintained in good order down to £2 for one right at the end of a long and varied—it served as a hen-house for a number of years—career.

SUMMARY OF RESULTS

In Table 44, overall results for the Breeding Flocks and Winter-fed Hoggs are shewn separately, together with results for the Sheep Enterprise as a whole.

Section A of the table gives the level of production for Breeding Flocks per annual acre devoted to them, and similar figures for the Winter-fed Hoggs and for the Sheep Enterprise, while corresponding figures for Production Costs and Margin are shown in sections B and C respectively.

Production per annual acre devoted to Breeding Flocks is higher in all groups, except the S/Spring, than the production per acre devoted to Winter-fed Hoggs, while Production Costs per acre are much higher in all groups for the Hoggs. In all groups there is a Surplus Margin per acre utilised by the Breeding Flocks, ranging from £5·3 in the S/Winter group to £8·6 per acre in the Ross group, while all groups show a Deficit Margin for land devoted to Winter-fed Hoggs of from £13·7 for the Hereford group to £6·4 per acre in the S/Spring group. The effect of losses from winter feeding upon the over-all results from the Sheep Enterprise as a whole is much greater for the two Herefordshire groups where 21–23 per cent of the total sheep acreage is absorbed by the winter-fed hoggs,

TABLE 44.

Summary of Results for Breeding Flocks, Winter-fed Sheep and the Sheep Enterprise, 1954–55

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
A. Production per Annual Acre Devoted to:	£	£	£	£	£
(*a*) Breeding Flock	27·9	20·8	16·1	19·5	16·6
(*b*) Winter-fed Sheep	17·6	17·6	20·4	11·4	16·1
(*c*) Sheep Enterprise	26·8	19·6	16·8	17·3	16·4
B. Production Costs:					
(*a*) Breeding Flock	21·1	15·5	9·8	10·9	9·9
(*b*) Winter-fed Sheep	29·5	29·5	26·8	24·1	29·8
(*c*) Sheep Enterprise	21·4	16·1	11·2	13·6	14·0
C. Margin (Surplus or Deficit)					
(*a*) Breeding Flock +	6·8	5·3	6·3	8·6	6·7
(*b*) Winter-fed Sheep −	11·9	11·9	6·4	12·7	13·7
(*c*) Sheep Enterprise +	5·4	3·5	5·6	3·7	2·4
D. Margin per Annual Acre Devoted to the Sheep Enterprise:					
(*a*) Breeding Flock +	6·2	4·8	6·2	6·6	5·3
(*b*) Winter-fed Sheep −	0·8	1·3	0·6	2·9	2·9
(*c*) Sheep Enterprise +	5·4	3·5	5·6	3·7	2·4
E. Production per £100 of:					
(1) *Total Production Costs*					
(*a*) Breeding Flocks	132	134	164	179	168
(*b*) Winter-fed Sheep	60	60	76	47	54
(*c*) Sheep Enterprise	125	122	150	127	117
(2) *Total Direct Labour:*					
(*a*) Breeding Flock	566	550	644	744	731
(*b*) Winter-fed Sheep	376	376	550	496	482
(*c*) Sheep Enterprise	539	532	653	689	658
(3) *Total Valuation of Sheep and Sheep Equipment:*					
(*c*) Sheep Enterprise	69	67	70	64	68

compared with 7 per cent for the S/Autumn group, and 9 to 11 per cent in the other two Somerset groups.

The effect of these differences in the relative importance of winter feeding between the groups is best illustrated by the figures shown in section D of Table 44 where the margin, surplus or deficit, from the two sections of the enterprise has been calculated over the acreage of land devoted to the Sheep Enterprise. These figures indicate that whereas the surplus arising from the Breeding Flocks varies from only £4·8 to £6·6 per acre the deficit accruing from winter feeding reduces this margin by more than one-half in the Hereford group, by

44 per cent in the Ross group, 25 per cent in the S/Winter group, by 14 per cent in the S/Autumn group, where little winter feeding is undertaken, and by 9 per cent only in the S/Spring group where the results from winter feeding were less unfavourable than in other groups. Margin per acre for the Sheep Enterprise is thus greatest in the S/Spring and S/Autumn groups at approximately £5·5 per acre, followed by the Ross and S/Winter groups at £3·6 and lowest in the Hereford group at only £2·4 per annual sheep acre.

It has been noted earlier that the figures shown make no allowance for the residual manurial values of foods consumed by sheep. These values, calculated on conventional standards, would increase the margin per sheep acre by approximately 28*s*. in the S/Autumn group, 19*s*. in the S/Winter and Ross groups, 17*s*. in the Hereford group and 13*s*. per annual sheep acre in the S/Spring group. The total value of manurial residues so calculated averages £56 per farm in the S/Winter group, £65 in the S/Spring and approximately £74 in the two Herefordshire groups and £80 per farm in the S/Autumn: of these totals, folded roots account for 84 per cent in the S/Spring group where little hand feeding is practised, 54 per cent in the Hereford group where hand feeding is very heavy, and 72–74 per cent of total residual manurial values in the remaining three groups.

RESULTS FOR THE SHEEP ENTERPRISE RE-CALCULATED AT 1956–7 PRICE LEVELS

In previous sections of the report the results for Breeding Flocks and Winter-fed sheep have been recalculated separately at 1956–7 price levels: here these two calculations are brought together to give the overall results for the Sheep Enterprise as a whole. The figures are set out in Table 45.

The more favourable economic conditions for both Breeding Flocks and Winter-fed Sheep in 1956–7 are reflected in higher levels of production; production per acre for the Breeding Flocks is higher in all groups, and exceeds £30 per annual acre in the S/Autumn group, but the biggest change is in the level of production for Winter-fed Sheep. With considerably lower store lamb prices in 1956–7, and slightly higher total returns for fat sheep, the Feeder's Margin is substantially increased compared with 1954–5 and total Production exceeds £30 per annual acre in all groups except the Ross group, and approaches £40 per acre in the S/Spring group.

TABLE 45.

Summary of Results for 1954–55 for Breeding Flocks, Winter-fed Sheep, and the Sheep Enterprise Re-Calculated at 1956–57 Price Levels

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
A. Production per Annual Acre Devoted to:	£	£	£	£	£
(*a*) Breeding Flocks	30·4	23·4	18·5	22·8	19·1
(*b*) Winter-fed Sheep	34·9	34·9	38·7	26·7	30·6
(*c*) Sheep Enterprise	30·8	24·6	20·4	23·7	21·5
B. Production Costs:					
(*a*) Breeding Flocks	22·6	16·7	10·6	11·6	10·6
(*b*) Winter-fed Sheep	29·9	29·9	28·6	24·3	28·7
(*c*) Sheep Enterprise	23·1	18·1	12·3	14·6	14·4
C. Margin (Surplus)					
(*a*) Breeding Flocks +	7·8	6·7	7·9	11·2	8·5
(*b*) Winter-fed Sheep +	5·0	5·0	10·1	2·4	1·9
(*c*) Sheep Enterprise +	7·7	6·5	8·1	9·1	7·1
D. Margin per Annual Acre Devoted to the Sheep Enprise:					
(*a*) Breeding Flocks +	7·3	6·0	7·2	8·6	6·7
(*b*) Winter-fed Sheep +	0·4	0·5	0·9	0·5	0·4
(*c*) Sheep Enterprise +	7·7	6·5	8·1	9·1	7·1
E. Production per £100 of:					
(1) *Total Production Costs:*					
(*a*) Breeding Flocks	135	140	175	197	180
(*b*) Winter-fed Sheep	117	117	135	110	107
(*c*) Sheep Enterprise	133	136	166	162	149
(2) *Total Valuation of Sheep and Sheep Equipment:*					
(*c*) Sheep Enterprise	83	89	91	93	95

Production Costs increased in 1956–7 in all sections of the sheep enterprise, but the increases are relatively small compared with increases in production, especially for Winter-fed Sheep, for which deficit margins in all groups in 1954–5 have been transformed into surpluses in 1956–7. For the Breeding Flocks the improvement in Margins in 1956–7 is greater for the three spring-lambing groups: total returns per lb. for fat lambs shows the biggest proportionate increase for lambs sold off grass from August to October, and least for early fat lambs sold from April to June, with an increase of intermediate extent for out of season lambs in February and March. Increased costs between the two periods, especially labour costs, affected the intensive early-lambing groups more severely than the spring-

lambing flocks, as the level of winter feeding, especially with folded roots, is considerably higher in the former groups.

In Section E of Tables 44 and 45 the average level of Production achieved per £100 of total Production Costs is shown for each of the two periods. This section also gives the level of Production per £100 total valuation of Sheep and Sheep Equipment for the Sheep Enterprise as a whole, and it may be noted in passing that in no group, in either year, not even in the very favourable year 1956–7, did Total Production equal the level of Total Valuation, and that in 1954–5 the highest ratio is only £70 Production per £100 Valuation.

For Breeding Flocks, the relationship between Production and Production Costs is distinctly more favourable, in both periods, for the spring-lambing flocks; Production is approximately 65–80 per cent above Costs in these groups in 1954–5, compared with 32–34 per cent above in the earlier-lambing groups, and there is a still greater relative advantage for the former groups in 1956–7. This advantage is, however, offset to some degree by a greater intensity of production in the earlier-lambing groups, and the Margin per acre in the S/Autumn group, which combines a low level of Production per £100 of Production Costs with the highest level of Production per acre, is second only to the Ross group in 1954–5. In 1956–7 however price movements on both the production and cost side have favoured the spring-lambing groups to a relatively greater degree, and the Margin per acre in the S/Autumn group has fallen in this period to fourth place, behind all three of the spring-lambing groups.

It seems reasonably clear that the out of season lamb producers of the S/Autumn group are by no means obtaining an adequate return from their breeding flocks in comparison with that accruing to flocks managed on more orthodox lines. The return per lb. obtained for lambs in February–March is, indeed, very considerably higher than for lambs sold off grass in September–October—about 9*d.* to 10*d.* per lb. higher in 1957—and the difference would have been still greater—about 13*d.* to 16*d.* per lb.—but for the fact that the Guarantee Payments were considerably higher in the latter period, but the evidence is that the higher returns for out of season fat lamb are not sufficient to offset the heavy costs of winter-feeding necessarily involved in this type of production. It needs to be emphasised that the lambs sold in this group are not the light-weight lambs whose production is so often advocated; even in February the average weight of fat lambs sold is 45 lb. carcase

weight. And the reason for selling at these heavy weights is not difficult to understand. By far the major part of the cost of production of a fat lamb is represented by the cost of keeping the ewe for the year, and the earlier in the season that the ewe lambs down the higher will be that cost, and the lighter the weight at which the lamb is slaughtered the higher per lb. will that major item of cost become. Total returns per lb. for a 30 lb. lamb sold in February–March would need to be about 40 per cent greater than for a 45 lb. lamb to yield the same margin per head i.e. at prices current in 1957 the 30 lb. lamb would need to fetch somewhere between 5*s*. 6*d*. and 6*s*. per lb. Clearly, a considerable element of the reward due to the out of season lamb producer must continue to be found in non-material satisfactions, and these, indeed, are not lacking. The case of the early fat-lamb producers of the S/Winter group, selling lambs from April onwards, is rather different. The financial returns from the Breeding Flocks in this group were the lowest of all groups, as the increased returns for early fat lamb are found to be even less commensurate with the cost of heavy winter feeding of ewes than is the case for out of season fat lamb: the price premium for early fat lamb just is not high enough to compensate for the additional costs incurred.

During recent years, those who are concerned with fatstock marketing have been at great pains to acquaint farmers with the view that there is room for a considerable increase in the supply of home-produced fat lamb during the months of April to June, and that public demand is for a light-weight carcase of 32–36 lb. It appears possible however that those who urge upon farmers the pressing need to meet this demand may be under some misapprehension as to what constitutes an effective demand. Certainly the consumer would always prefer to have the better quality article rather than the poorer—meat from a 35 lb. suck lamb in preference to that from a 50 lb. grass fed lamb—but this is not the point. Lambs ready for slaughter in April–June cost considerably more to produce than spring-born lambs, and the lighter the weight at which they are sold the higher per lb. will be the cost. In contrast, the spring-lambing ewe is much more cheaply wintered, and her heavy requirement for food during the suckling period is met mainly from grazing; the annual cost of keeping such an ewe, which constitutes the main cost of producing the fat lamb, is very substantially lower than for the ewe that lambs in December –January and requires heavy and expensive feeding during the

winter months. Further, in the case of spring-born lambs kept on after weaning, and sold fat at 45–50 lb. carcase weight in September–October, the liveweight increase is not only cheaply obtained from grazing, but each increase in weight spreads the overhead cost of ewe upkeep more and more thinly over each lb. of sale product. An effective demand for home-produced early light-weight fat lamb will exist if, and only if, the consumer is prepared to back his preference for meat of this quality with a willingness to pay a sufficiently high premium per lb. to offset the additional costs involved in its production.

At the present time there is fairly strong evidence that the premium for early fat lamb is inadequate to meet—in the case of arable flocks at least—the extra production costs involved, and there appears to be good reasons for doubting whether this premium is likely to be any more adequate in the future. Early home-produced fat lamb, slaughtered in April–June, comes forward at a time when the market is dominated by supplies of cheaply produced, good quality New Zealand lamb, and while this situation exists there is no real reason for supposing that the premium the public is prepared to offer for home-produced lamb will increase: indeed, any increase in the supply of the home-produced article at this period of the year would almost certainly result in a fall in the premium offered.

This situation is not helped in any way by the operation of the Fatstock Guarantee Scheme; not only do the heavier lambs sold in September–October receive the guarantee payments on a much greater weight per head than the early light weight lambs called for in April–May, but, to date, the payments have been at a higher rate per lb. for the autumn grass-fed lambs. In 1957 for example, guarantee payments were $\frac{3}{4}d.$ per lb. in March, $3d.$ in April and $5\frac{1}{2}d.$ per lb. in May compared with $7d.$ to $7\frac{1}{4}d.$ per lb. in September and October. This situation arises directly from the method of calculating Guarantee Payments, which is based on a schedule of Standard Prices which vary from season to season, but under which the total returns per lb. for fat sheep are prevented from diverging very far from the Standard Price at any season by the operation of Upper and Lower Stabilising Prices. These Standard Prices vary only from $38\frac{1}{4}d.$ per lb. in July–October to about $44\frac{1}{2}d.$ in March–April i.e. by 16 per cent approximately, while seasonal market prices for fat lamb vary by a great deal more than this—about 55 per cent between March and September 1957 for example. The effect of a relatively high market price for fat

sheep in March–May in relation to the Standard Price at that period, together with a converse relationship in September–October, is that a considerably higher level of Guarantee Payment emerges in the latter period than in the former.* The result of this arrangement is, in effect, that the discouraging effect that low market prices in the autumn would exert on the heavy level of supplies of fat lamb at that time is considerably mitigated by the high level of the Guarantee Payments determined for that period and, conversely, the effect that high market prices for lambs in March–April might exert in stimulating increased supplies is offset by lower Guarantee Payments. In other words, the Fatstock Guarantee Scheme is operating against the pull of market forces, tending to stimulate supplies of fat lambs in the autumn when supplies are already heavy, and to inhibit them in the early part of the year when they are much smaller.

This situation is, not unnaturally, a cause for considerable concern to those responsible for the marketing of home-produced fatstock. Spokesmen for the Fatstock Marketing Corporation have suggested that Guarantee Payments should be made at a flat rate per head on all eligible fat sheep and lambs, regardless of the weight of the carcase or the time of year at which the animal is sold. Such an arrangement would have the advantage of being easy to administer, and would be neutral in its effect on market forces, instead of operating in opposition to them. An alternative procedure which would reinforce the trend of the market in relation to supply and demand would be

* It appears, however, that a markedly different set of circumstances may be emerging in 1958. Average Guarantee Payments for January, February and March 1957 were 4½*d.*, 1¾*d.*, and ¾*d.* per lb. respectively, compared with corresponding figures of 6¾*d.*, 8¾*d.* and 11¼*d.* for the first three months of 1958: not only are the figures for 1958 much higher, but the trend is reversed. The level of the Guarantee Payment in the early months of the year is determined largely by the market price of fat hoggets —which form the major category of fat sheep sold at this period—in relation to the Standard Price for the period. However, whereas the Standard Price for the period is much the same in the two years, the market prices realised for fat hoggets in February and March 1958 averaged 9*d.* to 10*d.* per lb. lower than in the corresponding months of 1957, with a consequential increase in the rate of Guarantee Payments in 1958. Further, although the market price realised per lb. for early fat lamb was lower in March 1958 than in March 1957, the fall in price was considerably less than for fat hoggets, and total returns for early fat lamb in March 1958 show an improvement compared with the previous year. This improvement however owes nothing to improved demand or higher market prices for early fat lamb, but it is a gratuitous result arising from the relatively depressed state of the market for fat hoggets in 1958, and arises directly from the method adopted for calculating the Guarantee Payments, which affords one·rate of payment for all eligible classes of fat sheep and lambs.

to determine the Guarantee Payments each week as a fixed percentage of average current market prices for the class of sheep concerned.

Whatever changes may occur in the future in the determination of Guarantee Payments the present position appears to be, on the evidence available, that the very general opinion among farmers that the present price premium for early fat lamb is insufficient to cover the extra costs involved is a correct one. The results for this investigation indicate materially higher margins for spring-lambing flocks than for early fat lamb production, especially in 1956–7.

The results for the Sheep Enterprise as a whole are determined very largely by the extent to which winter feeding is practised. Production per £100 of total Production Costs for the Sheep Enterprise is highest, both in 1954–5 and 1956–7, in the S/Spring group, and Margin per annual acre is highest in this group in the former year and second highest in the latter year, despite the fact that sheep management is on distinctly less intensive lines in this group. It is probably not without significance that the S/Spring group is the only one in which sheep form one of the main income earning enterprises of the farm, in contrast to the other groups where sheep constitute a subsidiary enterprise concerned, as much as anything, with the maintenance of soil fertility to be cashed via arable sale crops, and with providing balance in an integrated system of husbandry.

The two Herefordshire groups achieved satisfactory results from their breeding flocks, but much of this was swallowed up in 1954–5 by the heavy deficit arising from the winter-fed sheep which, in these groups, are kept in large numbers and form a much more important part of the Sheep Enterprise as a whole than in any of the Somerset groups. In 1956–7 however, a much more favourable year for winter feeding, the margin from the breeding flock is reinforced by the feeding sheep, and the result for the Sheep Enterprise as a whole in the Ross group was the highest of any.

THE PLACE OF LOWLAND ARABLE SHEEP IN THE FARMING SYSTEM

There are some enterprises, notably pig and poultry production and, in some circumstances, milk production, which can be usefully discussed in isolation from the rest of the farm,

but this can never be true of lowland arable sheep, which invariably form part of an integrated system of farming. In order to obtain some more precise idea than that furnished by general impressions of the part played by sheep in the overall farming system, a series of questions intended to throw some light on this matter was put to all farmers co-operating in the investigation; one of these questions was "What are the reasons for keeping sheep?" This point, put to farmers in Herefordshire, was clearly in many cases not regarded as an intelligent question. In this county the great majority of farmers keep sheep, and always have done so, and, even at the peak of the ploughing-up campaign when the numbers of sheep in some West of England counties had been reduced to a third or less of pre-war numbers, the proportion in Hereford never fell below 73 per cent of the 1939 level.

In Herefordshire, the traditional system of mixed farming with corn, arable sheep and beef cattle, based on the four-course rotation, has been modified during the present century by the inclusion of cash root crops in the rotation, especially of sugar beet, and potatoes to a lesser extent, while in recent years vining peas have been introduced in parts of the county. These crops have partly replaced the traditional fodder crops in the root break, but they have also been accommodated by an extension of the rotation to five or six courses, a development which has also permitted the growing of an increased acreage of corn for sale. These changes have come about gradually over a considerable length of time, and represent a response not only to changes in economic circumstances but also to technical innovations in farming practice: they have, however, in no way affected the fundamental concept of "balanced farming" which underlies this system of management.

This objective of balance in farming practice has many inter-locking facets, and sheep play their part at every stage. In conjunction with cattle, sheep permit a balance to be maintained between livestock and crop production, between arable land and grassland and, within the arable sector, between extractive and fertility-building crops and between "cleaning" and "fouling" crops. Sheep and cattle complement each other in maintaining balanced grazing of the grassland, while the labour requirements of root-fed sheep—and yarded cattle—enable the summer labour requirements for crop production to be balanced by productive work for the regular workers during the winter months.

A closely integrated system of farming such as this has its output—and risks—spread over a number of sale products, a point of more than theoretical importance at the present time as many specialist producers of milk, pigs and poultry can testify, but the system stands or falls on the economic results for the system as a whole rather than upon a separate consideration of the parts. And the system of management practised in Herefordshire has served the farmer well in good times and in bad, through peace and war, and there appears to be no reason yet apparent why it should not continue to do so as well in the future as in the past; and, while this system lasts, so too will the arable sheep flocks, for the one cannot exist without the other.

However, there are a not inconsiderable number of farms, particularly among the bigger units, where large numbers of store lambs are bought in, in addition to the lambs provided by the breeding flock for winter feeding on root crops. Such farms will often be found with large areas of fodder root crops grown for folding, and, in relation to the size of the farm, quite small areas of cash roots—quite commonly 4 to 5 acres of sugar beet and an equally small or smaller area of potatoes—where considerably smaller farms may have two or three times as great an area. There can be little doubt in such cases that the overall profitability of the farm could be increased by the substitution of a considerably greater area of cash roots for fodder roots, accompanied by a reduction in the number of sheep fattened in the winter. Farmers concerned are well enough aware that this is the case, but they are equally concerned with the fact that adjustments such as these would introduce bottle-necks and periods of strain at certain seasons of the year into a smoothly running organisation: in fact, they appear to take a rather wider view of economic verities than is customary among economists themselves, seeking to maximize not their income so much as their own and the farm's well-being. Be that as it may, there undoubtedly exists a feeling, probably more often subconsciously than consciously held, and certainly more frequently held than specifically proclaimed, that there are times when it is wiser to "feed" the farm rather than the tax collector, in order that a reserve of fertility may be accumulated against the time when it may be needed.

There exists, also, a considerable variation from season to season in the relative profitability of the various sections of the sheep enterprise, a variability which—apart from indicating the danger of formulating judgments based on results obtained

for a single year—illustrates the conflicts that inevitably exist between the various sections of the industry. The substantial rise, for example, that occurred in 1957 in the price of draft ewes will be extremely welcome to the producers of this class of sheep, but it has greatly diminished the prospect of any profit from fat lamb production from flying flocks in the ensuing year; similarly, increased returns for fat hoggets may accrue to the feeder, but, on the other hand, all of the increase, and more, may pass through his hands and into those of the store lamb producer.

In the push and pull that constantly occurs between conflicting interests within the sheep industry the advantage in recent years has tended to seesaw to and fro, now favouring one interest and now the other. And, although the man who breeds and feeds and, in addition, rears his own replacements may remain largely unaffected by this internal struggle, the effect of this classical example of one man's meat being another's poison upon those who engage in only one or two of these branches of sheep production is to introduce a considerable element of uncertainty and instability into the enterprise. However, the balancing of swings and roundabouts lies at the core of mixed farming philosophy, and those who follow it are, by and large, temperamentally disinclined to engage in "chasing the market", but content to "take one year with another".

In the areas of West Somerset where farms in the S/Spring group are mainly located, a traditional system of farming based on corn, sheep and beef cattle persists also, but in these districts the proportion of the farm under tillage crops is considerably less than in Herefordshire, and there has been very little introduction of cash root crops. The same pattern of an integrated, balanced system of agriculture exists, with farming practice based on a rotational sequence of crops and a dovetailing of livestock and crop production, but sheep occupy a position much closer to the centre of affairs in the S/Spring group, and constitute one of the main income earning enterprises of the farming system. In this group land is truly devoted to sheep, whereas in the Herefordshire groups it would be nearer to the truth to say that sheep are devoted to the land, and directed primarily towards the maintenance of fertility and soil structure. Farms in the S/Spring group are considerably larger than in other groups and the system of management, both of the farm itself and of the sheep, is on markedly more extensive lines, designed to yield low production costs per unit of output on a relatively low output per acre, an

aim which, as far as the sheep are concerned, the results of this investigation suggest is being successfully accomplished.

In these areas of West Somerset the tradition of sheep farming is very strong, most farms have flocks of sheep and the sentiment persists that a man who farms without sheep is that much less the complete farmer. Traces of this same sentiment still undoubtedly exist in those areas of South Somerset where farms in the S/Autumn and S/Winter groups are mainly found, but in these areas the place that sheep occupy in the farming system is markedly different from either the S/Spring or the Herefordshire groups. In these areas traditional farming systems have, in this century, undergone not only extensive modification with the introduction of considerable areas of cash root and green crops, but also more fundamental changes associated with the introduction of dairy herds onto the majority of farms in these areas, displacing not only the beef cattle, but, in a good many cases, the sheep flocks as well. In consequence, among farmers in these areas, the question as to why sheep are kept can be regarded as meriting serious consideration. There are still those who maintain, especially where light sandy soil is involved, that this land cannot be farmed properly without the intervention of folded sheep, while others suggest that sheep are necessary if the land is to be farmed to the best advantage: such views however are probably held by a minority even of those who have sheep, and there is, in addition, the silent but succicnt testimony of those farmers, probably the majority in the area as a whole, who have farmed successfully without sheep for many years, and exhibit no apparent inclination, let alone compulsion, to re-introduce them.

It would probably be true to say that in these areas no-one is under any compelling need to keep sheep, and those that have them do so because, for one reason or another, they prefer to farm with sheep rather than without them. In addition to the usual advantages put forward for sheep that they contribute to the fertility and soil structure of the farm, they also undoubtedly, through mixed stocking, enable a better control of the grazing land to be achieved; they also permit off-lying fields, or fields inaccessible to the dung spreaders, to be manured at low cost, while many farmers regard sheep as providing, in their feet, the ideal implement for the consolidation of newly-established leys.

Stripped of all side issues it nevertheless remains true that the land devoted to sheep on farms in these areas almost certainly

yields a much lower level of production, and a lower margin per acre, than any other enterprise which is generally found on these farms. However, no other class of farm stock appears able to inspire quite the same degree of liking, even affection that sheep do in many farmers, and where, as is the case with arable sheep, the influence of sheep over the whole rotation, and in all branches of the farm economy, involves so many imponderable factors, so little susceptible to precise measurement, the influence of sentiment may be a potent factor in determining whether or not sheep are kept. In any case, sheep are profitable, and although the direct profit may be relatively low compared with that which results from alternative uses of the land devoted to the sheep, provided the farm as a whole yields a level of income regarded as adequate, the contribution of sheep, tangible or otherwise, need not be too closely called in question. There are, too, other satisfactions of a personal nature open to those who keep sheep, especially to those who produce out of season fat lamb from Dorset Horn flocks; the type of satisfaction which arises from membership of a small and select body of farmers undertaking a technically unusual and exacting operation, which will yield the further satisfaction of newly-born lambs at a time of year when most flocks are barely at the tupping stage, and fat lambs in the local markets before most flocks have started to lamb. Whether these non-financial satisfactions are sufficient to offset the somewhat inadequate return from this type of sheep enterprise is clearly a matter entirely for the individual concerned.

Financial Aspects of Washing Sheep

In determining whether any financial gain results from washing sheep the major point to be considered is whether the higher price per lb. for washed fleeces more than offsets the loss of weight resulting from the washing process. In addition, two minor considerations are also relevant, namely, the cost of carrying out the washing operation, and the saving, if any, in the cost of shearing washed sheep. Before proceeding with an analysis of the data relating to this question, it is interesting to examine the reasons given by the farmers concerned as to why they do, or do not, wash sheep. First, it may be noted that of the 41 farms in the three Somerset groups in 24 cases all adult sheep and lambs were washed, in 10 cases adult sheep were washed but not the lambs, and in the remaining 7 cases no

sheep of any type were washed. In the case of the 29 Herefordshire farms 14 washed all sheep, 9 washed adult sheep but not lambs, and in 6 cases no sheep were washed.

Washing sheep is a traditional practice in both counties, but the most significant point to emerge from this enquiry is that very few, if any, farmers have any precise knowledge as to whether they gain or lose financially through washing. Where the wool produced is of a type for which the price schedule accords a high premium for washed wool, e.g. Grade 5 and 6, Pick and Super Ewe and Wether, or Grades 80 and 81 Pick and Selected Dorset Horn, a considerable degree of confidence existed that washing was financially advantageous, but there was no certainty about the matter. Washing of sheep in these areas is, in fact, very largely concerned with factors other than the prospect of financial advantage, and it may be noted that the great majority of farmers who did not wash their sheep were not doing so from choice, but owing to the absence of washing facilities. The reason for this is that during the interwar years, when the price of wool fell to very low levels, the practice of washing declined and, as a result, a number of sheep-washes fell completely out of use. These, in time, became unusable, with the result that a proportion of farms now have no facilities for washing sheep within reasonable reach: as it is, some farmers included in this investigation are obliged to drive sheep quite considerable distances in order to wash them.

The main reasons why sheep are washed are associated with the nature of the shearing operation. Sheep concerned here are arable sheep which have been folded at one period or another during the winter on arable land, and their fleeces, in consequence, particularly after a wet winter such as 1954–5, become matted and clogged with grease, soil, etc., to such an extent that they become exceedingly difficult to shear in the unwashed state. Shearing, under the best conditions, is an unpopular job with all concerned, and especially so when sheep are shorn in the grease. It is hard work physically, involving sustained strain upon muscles not greatly exerted at other times of the year, and, taking place as it often does in a confined space, is accompanied by incessant din and general unpleasantness. It is an occupation very trying on the temper' and, for most of those engaged, the only good thing about it is to get it finished. Under these circumstances it is not surprising that most farmers feel that anything calculated to bring about amelioration of these conditions, and to put everyone

in a happier frame of mind is well worth undertaking. Washed wool not only removes a good deal of the unpleasantness from the actual shearing, but there is also very general agreement that provided sufficient time is allowed to elapse after washing the physical effort required is considerably reduced. Generally speaking, but depending upon the type of weather experienced after washing, shearing commences 7 to 10 days later on most farms, though in some cases, especially in the Herefordshire groups, a start is more usually made 4–7 days after washing.

The decision whether or not to wash cannot always be made in relation to the sheep alone, and perhaps the main objection raised to this operation is that it adds one more job at a period which, on lowland mixed farms, is a particularly congested one: at this time of year when many operations overlap the labour requirements of sheep are strictly competitive with those of other farm enterprises. By the elimination of washing, shearing can commence one to two weeks earlier, clearing the way for other urgent work, especially beet hoeing, and where sheep are not washed as a matter of policy rather than through lack of facilities this is almost invariably the reason advanced.

THE COST OF WASHING

In the great majority of cases where sheep were washed, both adult sheep and lambs are involved, and as the proportion of adult sheep to lambs varies considerably from farm to farm the calculation of the average cost of washing per head requires some adjustment on this account. The result of enquiries among co-operating farmers shows general agreement that the labour requirements for adult sheep (which have had previous opportunity to recognise washing as an experience to be avoided if possible) are higher per head than for lambs for the actual washing process, and that for the whole operation, which includes preparing the site, driving, resting, washing and returning the sheep, a ratio of three lambs to two adult sheep is appropriate as a basis for adjustment.

Of the total cost of the whole washing operation, over 96 per cent consists, in both counties, of the cost of labour; the balance of cost represents fees paid in some cases for the use of a neighbour's wash. Such charges are by no means invariably made and, where they are, the fee is often nominal in amount. The actual cost of washing per adult sheep equivalent (i.e. one adult sheep or $1\frac{1}{2}$ lambs) varies considerably from farm to

farm according to the distance sheep have to be driven to the wash, to the amount of preparation involved, and to the convenience or otherwise of the facilities available, especially whether these are such that sheep can be "persuaded" into the water on their own, or whether they require to be man-handled in.

The number of man-hours required for the whole operation averaged 5.9 per 100 adult equivalents for the Somerset flocks and 7.9 man-hours for the Herefordshire flocks: in the latter case washing more commonly takes place in rivers where facilities are often less covenient, and where the distances involved in driving sheep are, on average, considerably greater than in Somerset. The cost per adult sheep averaged 2.42*d.* for Somerset flocks and 3.27*d.* for Herefordshire, equal to just under, and just above, $\frac{1}{2}d.$ per lb. of wool respectively.

Washing sheep occasionally leads to death or injury of animals, but the incidence of casualties of this nature is very slight, and limited to rare cases of crushing, or of sudden death usually attributed to heart failure. Cases of chilling, leading to damaged udders and loss of condition are less rare, and largely dependent upon weather conditions immediately following washing. Losses of this nature are, however, too infrequent and of too little importance to have any effect upon the decision whether or not to wash.

COST OF SHEARING

In determining the average cost of shearing it is also necessary to adjust for varying proportions of lambs shorn, and again the general estimate indicates that three lambs will require the same length of time to shear as two adult sheep: lambs are more easily caught and brought to the shearer, and have a much smaller area of wool to remove, but greater care and attention is needed for shearing lambs, which carry wool over a larger part of their body than adult sheep, and which are much more restive under the clippers.

In Table 46 the average cost per head for shearing is itemised for all flocks in the Somerset groups where both adult sheep and lambs are shorn, together with corresponding figures for the Herefordshire groups: in addition, average shearing costs are given for twelve flocks, spread throughout both counties where shearing was done on contract. At this stage no differentiation is made between flocks where sheep are washed and those where sheep are shorn in the grease.

TABLE 46

Cost of Shearing for Flocks Where Adult Sheep and Lambs are Shorn. Average Cost per Adult Sheep Equivalent, 1954–5

	Somerset Flocks	Hereford Flocks	Contract Shearing
Number of Flocks	26	18	12
Sheep shorn per Flock			
Adult Equivalents: Washed	244	188	133
Greasy	57	40	62
Total	301	228	195
	%	%	%
Per cent Washed	81	82	68
SHEARING COSTS:	d.	d.	d.
Average Costs per Adult Sheep Equivalent:			
(1) Labour	15·7	17·4	4·8
(2) Contract	—	—	22·8
(3) Shearing Gear:			
(*a*) Repairs and Depreciation	4·0	4·5	1·0
(*b*) Sharpening	2·1	2·0	·6
Total	6·1	6·5	1·6
(4) Fuel	·8	1·0	·3
(5) Wool Cord	·7	—	·4
Total Cost	23·3	24·9	29·9

Where shearing was undertaken by the farm staff the average cost per adult sheep equivalent is approximately 2*s.*, slightly higher for the Herefordshire flocks and slightly lower for the Somerset: average labour requirements are 44 man hours per 100 head in the former case and 39 in the latter. Contract shearing cost nearly 2*s.* 6*d.* per adult equivalent on average, but the proportion of sheep shorn in the grease was considerably higher for contract shearing. In three cases out of the twelve the contractor provided shearing labour only, the farmer providing shearing gear and fuel, while in all cases some additional labour for catching sheep etc. had to be provided by the farmer concerned.

The per head cost of shearing depends quite considerably upon the number of sheep shorn: when the results for all flocks where shearing is undertaken by the farm staff are combined, and analysed according to the number shorn per flock, the following results are obtained.

Number of Adult Sheep Equivalents Shorn per Flock	Number of Flocks	Cost of Shearing per Adult Sheep Equivalent
No.	No.	*d.*
Less than 200 .	18	27
200–300 . .	23	25
300–400 . .	12	23
More than 400 .	4	18

Differences in the cost of shearing washed wool compared with greasy are directly relevant to the question whether a financial advantage results from washing. Unfortunately however the data provided by this investigation does not permit a really satisfactory comparison of the relative costs. A valid comparison would require that the breed of sheep is comparable between the two groups involved, that all sheep, both adult and lambs are shorn in both groups, and, in the washed group, all sheep are washed: also the average size of flock and the proportion of adult sheep to lambs would need to be comparable in both groups. The only groups of flocks which can be held to meet these requirements are limited to the Somerst area, and relates to 21 flocks where all sheep are both washed and shorn, and to a group, which includes only 5 flocks, where none are washed and all are shorn. Both groups contain only sheep of the Dorset breeds, there are only slight differences between them in the proportion of lambs to adult sheep, and the average number of adult sheep equivalents shorn per flock is within 3 head of 300 total head in both groups.

A comparison of the average cost of shearing for these two groups indicates that the only material difference between them lies in the cost of labour, which averaged 15·4*d.* per head for adult sheep for washed fleeces, and 17·1*d.* for greasy, a difference of roughly $1\frac{3}{4}d.$ per fleece. The group of flocks shorn in the grease is unfortunately a small one, which precludes any very great confidence in the result obtained from the comparison. However, it appears unlikely that the real difference, per lb. of wool, between the cost of shearing washed and greasy fleeces is a factor of any great importance. In view of the slight cost involved it may perhaps be permissible to conclude that the cost of washing sheep, at about $2\frac{1}{2}d.$ per fleece, is offset very largely by lower costs involved in shearing washed animals, and that the net difference in cost between washed and greasy wool, when considered in relation to the value of wool is, for all practical purposes, negligible. If this is

accepted, then the only point—and, in any case, the only really material point—remaining to be considered in the determination of the extent of the financial gain or loss from washing is the effect of the loss of weight on washing in relation to the increased price per lb. for washed wool.

Surprisingly, there appears to be an almost complete absence of any experimental evidence relating to the loss of weight on washing for the various breeds of sheep and types of wool, a circumstance which goes a long way to explain why so few farmers have any precise idea whether they gain or lose financially by washing. The position is complicated too by the fact that washing sheep does not by any means invariably result in the full advantage of the higher prices for washed wool being obtained, as, on some soils, dirt and other extraneous matter become so firmly embedded in the fleece that only scrubbing the sheep individually would remove it effectively. As this is an operation unlikely to be contemplated by many, and one that is unlikely to be rewarding if undertaken, the result is that deductions from the maximum prices for washed wool are by no means uncommon. Among flocks surveyed the average price paid for washed wool of the Pick Dorset Horn description for example was only 90 per cent of the maximum, and 94 per cent for Pick Dorset Down wool. Much of the deduction will be on account of inferior wool—the quality of wool in 1954–5 was below normal generally—or for discoloration (Pinks and Reds) which would affect both washed and greasy wool, but part of the deductions is in respect of inadequate removal of dirt etc. in the washing process.

Recently, data concerning the loss of weight on washing has been compiled for a number of grades of wool by the Wool Marketing Board which, with their permission, here gratefully acknowledged, is reproduced in Table 47. It must be emphasised that these figures are estimates of average losses; actual losses will vary, even for the same grade of wool, from farm to farm and from season to season.

This table sets out for each grade and description of wool the maximum price per lb. for Washed and Greasy wool of the 1957 clip, and the amount, in pence per lb. and as a percentage of the Washed price, by which the Greasy price is below the Washed price. In column (5) the estimated average per cent loss in weight on washing is given, while column (6) shows the amount, plus or minus, by which the percentage decrease in the price of Greasy wool exceeds or falls short of the percentage loss in weight on washing, i.e. column (6) =

TABLE 47

Fleece Wool. Maximum Prices per lb. for Washed and Greasy Wool of the 1957 Clip, Per Cent Loss in Weight on Washing, and Gain or Loss in d. per lb. of Greasy Wool on Washing. By Grade of Wool

Grade No.	Description of Wool	(1) Maximum Price d/lb. 1957 Clip: Washed	(2) Maximum Price d/lb. 1957 Clip: Greasy	(3) Decrease in price for Greasy Wool: Per lb.	(4) Decrease in price for Greasy Wool: Per cent	(5) Per cent loss in Weight on Washing	(6) Col. (4) less (Col. (5)	(7) Gain (+) or Loss (−) on Washing Pence per lb. Greasy Wool
		d.	d.	d.	%	%		d.
2	Pick Teg	77	61½	15½	20·1	13·5	+6·6	+5·08
6	Super Ewe and Wether	77½	62	15½	20·0	14·1	+5·9	+4·57
5	Pick Ewe and Wether	77	61⅛	15⅞	20·1	14·3	+5·8	+4·47
80	Pick Dorset Horn	74	59¾	14¼	19·3	15·4	+3·9	+2·89
106A	No. 2 Devon	53	46¼	6¾	12·7	7·9	+4·8	+2·54
4	Super Hogg	68½	58	10½	15·3	11·8	+3·5	+2·40
31 and 31A	Swaledale	55	49¾	5¼	9·5	5·4	+4·1	+2·26
78	Pick Dorset Down	75¼	60⅝	14⅝	19·6	16·9	+2·7	+2·03
106	No. 1 Devon	54	48⅜	5⅝	10·2	6·5	+3·7	+2·00
30A	Medium Gritstone and Lonk	57¾	51½	6¼	10·8	8·1	+2·7	+1·56
103A	Exmoor Horn No. 2	64½	58	6½	10·1	8·1	+2·0	+1·29
30	Fine Gritstone and Lonk	58¼	51¼	6¾	11·6	9·5	+2·1	+1·22
105	Heavy Cross-bred	58¼	51¼	7	12·0	10·3	+1·7	+0·99
22	Fine Lustre Ewe and Wether	55	49¾	5¼	9·5	7·7	+1·8	+0·99
12	Fine Half-bred Ewe and Wether	63½	57	6½	10·2	8·9	+1·3	+0·83
96	Selected Kent Ewe and Wether	60¼	55⅛	4⅞	7·9	6·7	+1·2	+0·72
51	Fine Radnor and Cross-bred	64¾	55¼	9½	14·7	14·1	+0·6	+0·39
23	Lincoln Ewe and Wether	55¾	49½	6¼	11·2	11·1	+0·1	+0·06
92C	Super Kent Half-breds	65	58	7	10·8	10·8	0·0	0·00
9	Fine Half-bred Hogg	63½	57	6½	10·2	10·3	−0·1	−0·06
54	Selected Welsh	62¼	53⅜	8⅞	13·7	14·1	−0·4	−0·25
25 to 29A	Massam Hogg, Ewe and Wether	54¾	49½	5¼	9·6	10·3	−0·7	−0·38
19	Fine Lustre Hogg	55	49⅞	5⅛	9·5	10·3	−0·8	−0·44
95	Super Kent Ewe and Wether	60¼	55½	4¾	7·9	9·3	−1·4	−0·84
104	Light Cross-bred	60¼	55	5¼	8·7	10·3	−1·6	−0·96
32	Scotch	57¾	55¾	2	3·5	5·3	−1·8	−1·04
103	Exmoor Horn No. 1	66¾	61	5¾	8·6	10·3	−1·7	−1·13
86 and 87	Pick Down Teg, Ewe and Wether	71	60	11	15·5	17·1	−1·6	−1·14
12AR	Fine Half-bred Ewe and Wether Lt. Arable	58½	52¾	5¾	9·8	11·8	−2·0	−1·17
9AR	Fine Half-bred Hogg Lt. Arable	58½	52¼	5¼	9·8	12·0	−2·2	−1·29
94	Fine Kent Teg	60¼	55½	4¾	7·9	12·0	−4·1	−2·47
20	Lincoln Hogg	59½	56	3½	5·9	10·3	−4·4	−2·62
75	Southdown Teg	72½	61¾	10¾	14·8	18·6	−3·8	−2·76
76	Southdown Ewe and Wether	74	63¾	10¼	13·9	17·7	−3·8	−2·81

column (4) less column (5). Clearly, if the proportion by which the price of the wool falls if shorn in the grease exceeds the proportionate loss in weight on washing, washing will show a financial advantage, and all grades of wool for which this is the case carry a positive sign in column (6), while those for which washing would show a loss carry a negative one. The extent of the margin of gain or loss is determined by the magnitude of the figure entered in column (6), related to the price per lb. for Washed wool of the grade concerned. Thus, a figure of +4·0 will signify a considerable advantage, and −4.0 a considerable disadvantage from washing, but the advantage or disadvantage will be greater in both cases for a grade of wool with a Washed price of 75*d.* per lb. than for one with a corresponding price of 55*d.* per lb. Each 1·0 value entered in column (6) is equal to 1 per cent of the maximum Washed price for the grade concerned, calculated per 1 lb. of greasy wool. For example, taking the first grade of wool shown in the table, Grade No. 2, Pick Teg, the maximum price per lb. for Washed wool of this grade is 77*d.* and 1 per cent of this is 0·77*d.* The column (6) entry for this grade is 6·6, so the total advantage to be derived from washing this grade of wool, for every 1 lb. of weight of fleece in the grease, is 0·77*d.* x 6·6 = 5·08*d.* per lb. greasy. Thus if the fleece from an animal yielding the Pick Teg description of wool has a total weight of 6 lb. while in the grease, the total gain from washing such an animal will be 6 x 5·08*d.* i.e. 2*s.* 6*d.* per fleece approximately.

In Table 47 the grades of wool are arranged in descending order of the advantage, per lb., derived from washing. Examination of the figures in the table reveals that the differences that exist in the percentage weight loss between the various grades is substantial, with a range from 5·3 per cent loss for Scotch wool—Grade No. 32—to 18·6 per cent for Grade No. 75 Southdown Teg: the majority of grades listed are covered by a range of 10–15 per cent loss of weight. The extent of the reduction of price for greasy wool varies from 2*d.* per lb. for Scotch wool to 15½*d.* per lb. for Pick Teg, and Pick and Super Ewe and Wether, while the reduction, expressed as a percentage of the washed price, ranges from 3·5 per cent for Scotch wool to 20·1 per cent for Pick Teg, Ewe and Wether, with a range of 8–15 per cent covering the majority of cases.

Of the 34 grades of wool listed, the first 18 show a financial advantage from washing, ranging from just over 5*d.* per lb. of greasy weight for Pick Teg down to less than one-tenth of a penny for Lincoln Ewe and Wether wool: the next grade down,

Super Kent Half-breds, shows an equal return for wool shorn washed or in the grease, while the remaining 15 grades show a gradually increasing loss from washing up to a loss of over $2\frac{3}{4}d.$ per lb. greasy for the last two grades listed, Southdown Teg, Ewe and Wether.

At the present time, with the value of wool commonly worth 25*s.* to 35*s.* per fleece, a gain or loss of 6*d.* or less per fleece can be regarded as of too little importance to affect a decision whether or not to wash sheep. If this is accepted, then the top 14 grades in Table 47 will yield what may be regarded as a financially significant advantage from washing, and the bottom 11 grades a corresponding disadvantage: for the 9 grades in between, Fine Half-bred Ewe and Wether to Fine Lustre Hogg inclusive, it will be, financially, a matter of indifference whether washing is undertaken or not. If the limits of financial indifference are put higher, at 1*s.* per fleece gain or loss, then only the last four grades in the table will suffer losses of more than 1*s.* per fleece on washing, a level of loss which many farmers might consider well worth incurring in view of the non-financial benefits associated with shearing washed rather than greasy fleeces. At the other end of the scale, the first nine groups will have gains from washing in excess of 1*s.* per fleece, while for the first three the gains are likely to be over 2*s.* per fleece.

The data in Table 47 is applicable, it should be noted, only to the prices for wool shown, prices which are those determined for the 1957 clip. Table 48 however may be used to give a rough indication of the gain or loss resulting from any level of prices determined for subsequent years for the grades of wool shown in Table 47.

The table is used in the following manner: firstly maximum prices for washed and greasy wool for the grade of wool under consideration are ascertained, and the percentage reduction in price for greasy wool is calculated. From this figure—which corresponds to the figures in column (4) Table 47—is deducted the percentage loss in weight on washing for that particular grade of wool shown in column (5) in Table 47. If the resulting figure is positive i.e. if the per cent reduction in price exceeds the per cent loss in weight, a financial gain from washing is indicated; if negative, a loss. Supposing that the figure obtained is, say, +2·1: the next stage then is to consult Table 48, which gives, at the headings of colums (2) to (9), ranges of numbers corresponding to the figures obtained in column (6) of Table 47. Our figure 2·1 falls within the range 1·50 to 2·49 i.e. column (4) Table 48—the sign, + or −, carried is imma-

terial in determining which range the number falls in; it merely indicates whether there is a gain or loss. Suppose, further, that the maximum price per lb. for washed wool for the grade and year with which we are concerned is 74*d.* per lb.: the price per lb. 75*d.* shown in column (1) is selected as being nearest to our price of 74*d.* and the entry on the line 75*d.*, under column (4) in Table 48 i.e. 1·50*d.*, gives the approximate amount—a gain in this case—for each 1 lb. of greasy fleece. In short, if the greasy weight of the fleece yielding the type of wool under consideration is normally about 6 lb. the gain from washing will be 6 x 1·50*d.* = 9*d.* per fleece.

TABLE 48

Data for the Determination, in Conjunction with Table 47, of the Advantage Derived from Washing Wool

(1) Washed Wool Price per lb.	(2) 0·00 to 0·49	(3) 0·50 to 1·49	(4) 1·50 to 2·49	(5) 2·50 to 3·49	(6) 3·50 to 4·49	(7) 4·50 to 5·49	(8) 5·50 to 6·49	(9) 6·50 to 7·49
d.	d.	d.	d.	d.	d.	d.	d.	d.
40	0·10	0·40	0·80	1·20	1·60	2·00	2·40	2·80
45	·11	·45	·90	1·35	1·80	2·25	2·70	3·15
50	·13	·50	1·00	1·50	2·00	2·50	3·00	3·50
55	·14	·55	1·10	1·65	2·20	2·75	3·30	3·85
60	·15	·60	1·20	1·80	2·40	3·00	3·60	4·20
65	·16	·65	1·30	1·95	2·60	3·25	3·90	4·55
70	·17	·70	1·40	2·10	2·80	3·50	4·20	4·90
75	·19	·75	1·50	2·25	3·00	3·75	4·50	5·25
80	·20	·80	1·60	2·40	3·20	4·00	4·80	5·60
85	·21	·85	1·70	2·55	3·40	4·25	5·10	5·95

Table 48 can be used only for the grades of wool listed in Table 47. However, as data for the loss of weight on washing become available for additional grades of wool it is hoped that it will be possible to widen the scope of Table 48 to cover a greater range of types of wool.

Reverting to the 1957 wool clip, it may be noted that for the types of wool produced by sheep included in this survey of arable flocks, an advantage from washing of 1*s.* per fleece or more is likely to be achieved for most wool obtained from sheep of the Dorset Horn or Down breeds, although, in the case of the Extra Pick Dorset Down grade, the gain may be less than 1*s.* per fleece owing to the fact that for this grade the per cent deduction in price for greasy wool is rather less than for the other grades of Dorset Horn and Down wool. For

flocks in the two Herefordshire groups, where Pick and Super Ewe and Wether wool accounts for one-third of total fleece wool, the advantage derived from washing wool of these grades is likely to be over 2*s.* per fleece, but for Fine Cast and Fine Half-bred Ewe and Wether, which together account for more than one-half of the total, the gain from washing is under 6*d.* per fleece. Altogether, grades of wool showing a gain, greater or smaller, from washing account for over 90 per cent of the total fleece wool produced in the S/Autumn and the two Herefordshire groups, for 82 per cent in the S/Winter, and 76 per cent of the total in the S/Spring group: the proportion may well be higher in all groups, and especially in the two latter groups, as no data on loss of weight on washing is available for some of the grades of wool produced by these flocks. Clearly, however, the widespread practice of washing sheep that exists among these arable flocks in both counties is as soundly based on financial grounds as it is on purely technical grounds, although the latter considerations are probably the more important in determining policy in this matter.

APPENDIX

TABLE A

Cropping at June 4th, 1955. Average Acreage and Rental Value per Farm

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
Average per Farm:	Acres	Acres	Acres	Acres	Acres
(1) Grain Crops:					
(*a*) Wheat	14·7	12·2	18·9	30·6	46·4
(*b*) Barley	51·7	21·8	39·4	52·2	18·1
(*c*) Oats	5·3	10·8	11·2	14·9	12·4
(*d*) Mixed Corn	3·5	6·8	6·6	4·7	7·1
(*e*) Beans	0·9	1·1	2·6	—	0·4
Total	76·1	52·7	78·7	102·4	84·4
(2) Roots and Green Fodders:					
(*a*) For Sale:					
Sugar Beet	7·0	4·8	1·4	10·4	3·9
Potatoes	16·7	8·0	1·5	3·7	5·7
Other	9·0	1·3	0·4	—	4·5
Total	32·7	14·1	3·3	14·1	14·1
(*b*) For Feeding	30·0	22·0	26·3	15·9	17·8
Total Roots and Green Fodders	62·7	36·1	29·6	30·0	31·9
Total Tillage	138·8	88·8	108·3	132·4	116·3
(3) Grassland:					
(*a*) For Mowing	65·4	62·9	76·8	60·1	69·1
(*b*) For Grazing	90·3	101·4	150·4	105·8	104·5
(*c*) Grass Orchards	6·8	4·7	3·5	9·9	17·8
Total Grassland	162·5	169·0	230·7	175·8	191·4
(4) Rough Grazings, Woods, Waste, Roads and Buildings	3·0	3·1	5·8	4·0	13·3
Total Farm Area	304·3	260·9	344·8	312·2	321·0
Rental Value:	£	£	£	£	£
Average per Farm:					
Cottages	76·2	56·5	53·6	62·4	51·2
Farmhouse	36·8	35·7	35·6	30·6	37·8
Buildings	85·0	51·3	45·5	46·3	48·2
Total	198·0	143·5	134·7	139·3	137·2
Land	649·3	610·3	583·8	564·3	579·5
Total Farm Rent	847·3	753·8	718·5	703·6	716·7

TABLE B

Stocking at June 4th, 1955. Average Numbers of Stock per Farm

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
Average Number per Farm:	No.	No.	No.	No.	No.
(1) Cattle:					
(*a*) Cows: Dairy	23·0	28·3	15·8	4·8	6·3
Beef	6·0	3·0	9·9	15·0	12·5
Total Cows	29·0	31·3	25·7	19·8	18·8
(*b*) Other Cattle:					
Two years and over	27·6	23·4	31·8	7·7	24·4
One or two years	18·9	21·4	27·7	36·7	26·0
Under one year	16·4	23·6	20·8	31·6	14·8
Total Other Cattle	62·9	68·4	80·3	76·0	65·2
Total Cattle	91·9	99·7	106·0	95·8	84·0
(2) Sheep:					
(*a*) Ewes	155	125	166	129	126
(*b*) Other Sheep	76	136	224	173	186
Total Sheep	231	261	390	302	312
(3) Horses:					
Total Horses	1·6	1·2	1·7	1·6	1·4
(4) Pigs:					
(*a*) Sows and Gilts	7	8	3	2	1
(*b*) Other Pigs	55	54	22	20	9
Total Pigs	62	62	25	22	10
(5) Poultry:					
Total Poultry	447	336	215	103	176
Cow Equivalent Units:					
(1) Per 100 acres Total Farm Area	46·1	53·7	43·8	36·5	35·6
(2) Per 100 acres Total Feed Area*					
(*a*) At June	68·3	65·8	53·3	53·0	47·2
(*b*) At November	76·6	64·7	51·8	59·7	52·7
	%	%	%	%	%
(3) Per cent of Total:					
(*a*) Cattle:					
Cows	26·5	29·4	21·0	20·3	18·5
Other Cattle	33·7	33·8	39·4	40·2	42·8
Total Cattle	60·2	63·2	60·4	60·5	61·3
(*b*) Sheep	26·2	25·4	33·3	33·1	33·6
(*c*) Horses	1·6	1·3	1·3	2·0	1·6
(*d*) Pigs	7·7	6·9	3·1	3·2	1·5
(*e*) Poultry	4·3	3·2	1·9	1·2	2·0
Total Stock	100·0	100·0	100·0	100·0	100·0

* Total Farm Area less acreage of sale crops.

TABLE C

Average Cost per Acre of Growing Main Crop Folded Root and Green Fodder Crops, 1954

	Swedes		Kale		Swedes and Kale		Other Roots*	
	Somerset	Hereford	Somerset	Hereford	Somerset	Hereford	Somerset	Hereford
Number of fields	9	20	13	12	21	—	14	13
Total Acreage	50	131	122	87	207	—	94	114
	£	£	£	£	£	£	£	£
(1) Operational Cost								
(*a*) Manual labour	7·46	5·49	2·94	3·92	4·54		2·42	2·40
(*b*) Piece work	—	2·23	—	—	·82		—	·82
(*c*) Tractor	3·20	3·22	2·88	3·32	2·98		2·48	2·15
(*d*) Horse	·08	·09	·02	·02	·05		·04	·05
Total	10·74	11·03	5·84	7·26	8·39	—	4·94	5·42
(2) Manures								
(*a*) F.Y.M. applied	5·99	6·68	5·76	5·54	7·11		1·71	2·54
(*b*) Artificials applied	3·33	5·75	3·61	7·65	3·28		3·45	3·77
(*c*) Residues b/f.	·73	·66	·87	1·12	·57		1·28	·84
(*d*) *Less* Residues c/f.	4·10·	5·25	3·93	5·09	4·62		2·17	2·50
Net Cost	5·95	7·84	6·31	9·22	6·34	—	4·27	4·65
(3) Field Costs								
(*a*) Rent	2·03	1·84	2·07	1·66	1·85		1·90	1·90
(*b*) Lime	·26	·11	·17	·19	·13		·18	·07
(*c*) Hedging etc.	·40	·30	·40	·30	·40		·40	·30
Total	2·69	2·25	2·64	2·15	2·38	—	2·48	2·27
(4) Miscellaneous								
(*a*) Seeds/Plants	0·40	0·47	0·60	0·53	0·60		0·62	0·55
(*b*) Other	·08	—	·02	—	·01		·07	—
Total	0·48	0·47	0·62	0·53	0·61	—	0·69	0·55
(5) Implements								
Repairs and Depreciation	1·40	1·40	1·40	1·40	1·40	—	1·40	1·40
Total Cost	21·26	22·99	16·81	20·56	19·12	—	13·78	14·29
	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours
Average per Acre								
(*a*) Man hours	49·7	36·6	19·5	26·1	30·2	—	16·1	16·0
(*b*) Tractor hours	16·1	16·4	14·6	16·8	15·2	—	12·7	11·2
(*c*) Horse hours	1·1	1·2	0·3	0·3	0·7	—	0·5	0·7

* Somerset: Turnips: 59 acres. Turnips with Rape or Kale: 22 acres. Rape, or Rape and Rye-grass: 13 acres.
Herefordshire: Turnips: 25 acres. Turnips with other crops: 73 acres. Rape: 16 acres.

TABLE D

Average Cost per Acre of Growing Catch Crop Folded Root and Green Fodder Crops, 1954

	Brassicas		Oats and Vetches	Trefoil, Trifolium
	Somerset	Hereford	Somerset	Somerset
Number of fields	23	7	11	8
Total Acreage	120	55	69	87
(1) Operational Costs:	£	£	£	£
(*a*) Manual labour	2·14	1·08	0·98	0·69
(*b*) Piece work	—	·29	—	—
(*c*) Tractor	1·50	1·11	1·13	·82
(*d*) Horse	·01	·03	—	—
Total	3·65	2·51	2·11	1·51
(2) Manures:				
(*a*) F.Y.M. applied	—	—	0·26	—
(*b*) Artificials applied	2·43	2·23	1·30	0·09
(*c*) Residues b/f.	1·34	·91	·49	·60
(*d*) *Less* Residues c/f.	1·12	·63	·39	—
Net Cost	2·65	2·51	1·66	0·69
(3) Field Costs*				
(*a*) Rent	1·10	1·03	0·97	1·07
(*b*) Lime	·08	·11	·05	·05
(*c*) Hedging, etc.	·20	·15	·20	·20
Total	1·38	1·29	1·22	1·32
(4) Miscellaneous:				
(*a*) Seeds/Plants	0·49	0·60	3·22	1·76
(*b*) Other	—	—	—	—
Total	0·49	0·60	3·22	1·76
(5) Implements: Repairs and Depreciation	0·82	0·85	0·89	0·74
Total cost	8·99	7·76	9·10	6·02
Average per Acre:	Hours	Hours	Hours	Hours
(*a*) Man hours	14·3	7·2	6·6	4·6
(*b*) Tractor hours	7·6	5·9	5·9	4·2
(*c*) Horse hours	0·1	0·4	—	—

* Proportion of annual costs.

TABLE E

Fat Lamb Sold: Average Estimated Dressed Carcase Weight. Average Price per lb. E.d.c.w. and per Head: By Weight Groups

	Somerset								
	Estimated Dressed Carcase Weight								
	Under 40 lb.			40 to 48 lb.			48 to 56 lb.		
	Average E.d.c.w.	Av. price		Average E.d.c.w.	Av. price		Average E.d.c.w.	Av. price	
		Per lb.	Per Head		Per lb.	Per Head		Per lb.	Per Head
1955	lb.	d.	£	lb.	d.	£	lb.	d.	£
February	39·1	45·3	7·37	45·5	48·3	9·16	52·3	48·0	10·44
March	39·3	45·2	7·40	45·5	46·5	8·81	50·8	44·6	9·42
April	38·5	49·4	7·93	44·7	47·8	8·91	50·2	44·5	9·31
May	37·0	48·9	7·54	44·5	45·1	8·35	51·4	42·5	9·11
June	37·7	40·7	6·40	44·6	39·2	7·28	51·1	36·8	7·84
July	—	—	—	—	—	—	—	—	—
August	34·5	36·5	5·25	46·4	38·2	7·39	—	—	—
September	—	—	—	46·5	35·1	6·80	51·7	36·2	7·79
October	—	—	—	45·3	35·4	6·69	52·1	35·6	7·72
November	—	—	—	—	—	—	—	—	—

	Herefordshire											
	Estimated Dressed Carcase Weight											
	Under 40 lb.			40 to 48 lb.			48 to 56 lb.			56 to 66 lb.		
	Average E.d.c.w.	Av. price		Average E.d.c.w.	Av. price		Average E.d.c.w.	Av. price		Average E.d.c.w.	Av. price	
		Per lb.	Per Head		Per lb.	Per Head		Per lb.	Per Head		Per lb.	Per Head
1955	lb.	d.	£	lb.	d.	£	lb.	d.	£	lb.	d.	£
February	—	—	—	—	—	—	—	—	—	—	—	—
March	—	—	—	—	—	—	—	—	—	—	—	—
April	34·9	54·0	7·86	—	—	—	—	—	—	—	—	—
May	34·4	51·5	7·38	42·0	47·0	8·22	—	—	—	—	—	—
June	37·5	42·1	6·59	42·7	40·5	7·21	—	—	—	—	—	—
July	37·2	39·2	6·08	45·2	37·8	7·09	51·6	33·9	7·30	—	—	—
August	39·8	35·3	5·85	46·3	34·9	6·73	—	—	—	—	—	—
September	—	—	—	46·2	33·7	6·49	51·3	32·4	6·93	60·4	30·0	7·55
October	39·7	35·8	5·93	44·6	33·7	6·27	50·3	31·3	6·57	60·2	30·2	7·57
November	—	—	—	45·6	34·5	6·56	52·1	31·7	6·88	62·1	29·2	7·54

TABLE F

Analysis of Wool Sales: by Grade of Wool

Grade of Wool:	Somerset						Herefordshire			
	Autumn		Winter		Spring		Ross		Hereford	
	Per cent of total weight	Average price per lb.	Per cent of total weight	Average price per lb.	Per cent of total weight	Average price per lb.	Per cent of total weight	Average price per lb.	Per cent of total weight	Average price per lb.
	%	d.	%	d.	%	d.	%	d.	%	d.
(A) Fleece Wool										
(1) Pick and Super: Washed	6·7	73·9	10·3	75·1	13·4	75·3	20·8	78·5	22·1	77·4
Greasy	—	—	4·4	59·5	4·7	65·5	4·3	61·2	8·0	62·4
Total	6·7	73·9	14·7	70·4	18·1	72·7	25·1	75·5	30·1	73·4
(2) Dorset Down: Washed	7·4	78·5	21·2	80·3	29·1	78·8	—	—	—	—
Greasy	0·2	67·5	17·7	62·3	1·0	61·7	—	—	—	—
Total	7·6	78·3	38·9	72·1	30·1	78·1	—	—	—	—
(3) Dorset Horn: Washed	60·8	73·9	4·5	75·1	—	—	—	—	—	—
Greasy	1·2	63·9	—	—	—	—	—	—	—	—
Total	62·0	73·7	4·5	75·1	—	—	—	—	—	—
(4) Miscellaneous: Washed	7·4	64·9	11·2	65·0	22·9	65·4	30·4	66·7	35·2	66·2
Greasy	—	—	8·5	54·3	3·3	54·9	15·4	55·5	9·1	54·7
Total	7·4	64·9	19·7	60·4	26·2	64·0	45·8	62·9	44·3	63·8
Total Fleece Wool	83·7	73·4	77·8	69·0	74·4	71·9	70·9	67·4	74·4	67·7
(B) Lambs Wool										
(1) Dorset Down: Washed	—	—	4·1	51·7	10·0	50·7	—	—	—	—
Greasy	2·4	48·2	5·6	48·8	—	—	—	—	—	—
Total	2·4	48·2	9·7	50·0	10·0	50·7	—	—	—	—
(2) Dorset Horn: Washed	10·1	59·5	0·6	63·3	—	—	—	—	—	—
Greasy	1·1	51·0	—	—	—	—	—	—	—	—
Total	11·2	58·7	0·6	63·3	—	—	—	—	—	—
(3) Miscellaneous Washed	—	—	3·8	49·3	7·1	51·6	13·5	53·3	13·6	52·7
Greasy	0·4	43·6	6·0	44·4	5·1	46·7	13·7	48·4	9·9	48·1
Total	0·4	43·6	9·8	46·3	12·2	49·5	27·2	50·8	23·5	50·7
Total Lambs Wool	14·0	56·5	20·1	48·6	22·2	50·1	27·2	50·8	23·5	50·7
(C) Tail, Locks, Dag, etc.	2·3	27·6	2·1	16·2	3·4	28·5	1·9	35·5	2·1	26·1
Total Wool	100·0	70·0	100·0	63·8	100·0	65·6	100·0	62·3	100·0	62·8

TABLE G

Cost of Ley Establishment, 1954–5

	Somerset						Herefordshire			
	Autumn		Winter		Spring		Ross		Hereford	
	Under-sown	Direct seeded	Under-sown	Direct seeded	Under-sown	Direct seeded	Under-sown	Direct seeded	Under-sown	Direct seeded
	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
Ley Establishment										
Acreage Established										
(*a*) 1 to 2 year ley	182	5	109	20	83	16	177	—	269	—
(*b*) Longer leys	19	45	99	72	237	33	166	23	152	15
Total leys	201	50	208	92	320	49	343	23	421	15
	£	£	£	£	£	£	£	£	£	£
Average Cost per Acre										
(1) *Labour and Power*										
(*a*) Manual Labour	0·15	0·57	0·27	1·00	0·17	0·62	0·16	1·20	0·15	0·96
(*b*) Power	·14	·56	·21	1·17	·20	·78	·17	1·43	·11	1·20
Total	0·29	1·13	0·48	2·17	0·37	1·40	0·33	2·63	0·26	2·16
(2) *Manures* (net cost)										
(*a*) F.Y.M.	—	—	—	—	—	—	—	—	—	—
(*b*) Artificials	—	2·94	—	1·46	—	2·32	—	2·70	—	1·33
Total	—	2·94	—	1·46	—	2·32	—	2·70	—	1·33
(3) *Miscellaneous*										
(*a*) Implements	—	1·00	—	1·00	—	1·00	—	1·00	—	1·00
(*b*) Seeds	3·06	4·57	3·27	3·34	3·54	3·26	3·45	4·30	3·08	4·00
Total	3·06	5·57	3·27	4·34	3·54	4·26	3·45	5·30	3·08	5·00
Total Cost per Acre	3·35	9·64	3·75	7·97	3·91	7·98	3·78	10·63	3·34	8·49

TABLE H

Average Cost per Acre of Pasture and Mowing Land, 1954–5

	Somerset						Herefordshire			
	Autumn		Winter		Spring		Ross		Hereford	
	Mowing Land	Pasture	Mowing Land	Pasture	Mowing Land	Pasture	Mowing Land	Pasture	Mowing Land	Pasture
Grassland Costs	£	£	£	£	£	£	£	£	£	£
Average Cost per Acre										
(1) *Labour and Power:*										
(*a*) Manual Labour	0·15	0·14	0·15	0·15	0·14	0·14	0·13	0·17	0·09	0·12
(*b*) Power	·16	·11	·18	·14	·14	·12	·13	·19	·11	·13
Total	0·31	0·25	0·33	0·29	0·28	0·26	0·26	0·36	0·20	0·25
(2) *Manures* (net cost)										
(*a*) F.Y.M.	—	—	0·03	—	0·07	0·02	0·03	—	—	—
(*b*) Artificials	1·52	0·54	1·24	0·59	1·25	·47	1·07	0·39	1·13	0·34
Total	1·52	0·54	1·27	0·59	1·32	0·49	1·10	0·39	1·13	0·34
(3) *Field Costs*										
(*a*) Rent	2·21	2·17	2·37	2·46	1·71	1·70	1·77	1·83	1·92	1·92
(*b*) Lime	·26	·26	·13	·14	·13	·15	·12	·11	·13	·11
(*c*) Hedging etc.	·40	·40	·40	·40	·40	·40	·30	·30	·30	·30
Total	2·87	2·83	2·90	3·00	2·24	2·25	2·19	2·24	2·35	2·33
(4) *Ley Establishment*	1·43	0·87	1·08	0·27	1·03	0·16	1·34	0·44	1·21	0·10
(5) *Miscellaneous*										
(*a*) Implements	0·30	0·30	0·30	0·30	0·30	0·30	0·30	0·30	0·30	0·30
(*b*) Spray materials	—	·10	—	·03	—	·04	—	·10	—	·12
Total	0·30	0·40	0·30	0·33	0·30	0·34	0·30	0·40	0·30	0·42
Total Cost	6·43	4·89	5·88	4·48	5·17	3·50	5·19	3·83	5·19	3·44
	%	%	%	%	%	%	%	%	%	%
Temporary Pasture as per cent of total area	64·2	21·8	58·8	15·8	72·8	14·3	93·9	29·8	66·7	7·0
	%		%		%		%		%	
Mowing Land as per cent of total Grassland area	47·4		40·5		34·0		35·3		35·8	

TABLE I

Average Monthly Auction Prices, Guarantee Payments and Total Returns for Fat Lambs*
Pence per lb. E.d.c.w. Total Returns in 1957 as Per Cent of 1955

	1955			1956			1957			1957 as per cent of 1955
	Auction Price	Guarantee Payments	Total Returns	Auction Price	Guarantee Payments	Total Returns	Auction Price	Guarantee Payments	Total Returns	
	d.	d.	d.	d.	d.	d.	d.	d.	d.	%
January	39	3½	42½	37¾	3¼	41	43½	4½	48	112·9
February	42	3¼	45¼	37¾	3½	41¼	47¼	1¼	48½	107·2
March	42¾	3½	46¼	49½	3¾	53¼	50¼	¾	51	110·3
April	44½	4½	49	47¼	3¾	51	46¼	3	49¼	100·5
May	40½	4¼	44¾	40¾	5¼	46	39½	5½	45	100·6
June	35¾	3½	39¼	34½	6¼	40¾	35¼	6¼	41½	105·7
July	36¼	3½	39¾	32¾	6	38¾	33¼	7	40¼	101·3
August	32½	3	35½	32	6	38	33¾	7¼	41	115·5
September	33¾	2¾	36½	31¾	6¼	38	33½	7	40½	111·0
October	33¼	2½	35¾	33¼	6½	39¾	34	7¼	41¼	115·4

* Average Auction Prices are for Grade A Light Lambs (Unshorn) up to and including March 1957, thereafter for Light Lambs (Unshorn).

TABLE J

Average Monthly Auction Prices, Guarantee Payments and Total Returns for Winter-fed Sheep.*
Total Returns in 1956–7 as Per Cent of 1954–5

	1954–5			1955–6			1956–7			1956–7 as per cent of 1954–5
	Auction Price	Guarantee Payments	Total Returns	Auction Price	Guarantee Payments	Total Returns	Auction Price	Guarantee Payments	Total Returns	
	d.	d.	d.	d.	d.	d.	d.	d.	d.	%
LAMBS										
October	34¾	5	39¾	31½	2½	34	32	6½	38½	96·9
November	36½	4¾	41¼	32	2½	34½	31½	6½	38	92·1
December	37	4	41	31½	2¾	34¼	33¼	6	39¼	95·7
HOGGETS										
January	36½	3½	40	31¼	3¼	34½	37½	4½	42	105·0
February	36¼	3¼	39½	32¾	3½	36¼	40½	1¼	41¾	105·7
March	35¼	3½	38¾	36½	3¾	40¼	41¼	¾	42	108·4
April	35	4½	39½	38	3¾	41¾	38¼	3	41¼	104·4
May	35	4¼	39¼	30¾	5¼	36	33¾	5½	39¼	100·0
June	31	3½	34½	26½	6¼	32¾	28¾	6¼	35	101·4

*October–December: Average Auction Prices for Grade A Heavy Lambs (unshorn).
January–June: Grade A Heavy Hoggets (unshorn) to March 1957, thereafter Heavy Hoggets (unshorn).

TABLE K

Guaranteed Maximum Prices for a Number of Grades of Wool, 1951–7
Prices in d. per lb. for Washed Wool

Grade	Description	Price per Lb. Washed Wool							Index: 1955=100			
		1951	1952	1953	1954	1955	1956	1957	1951	1953	1956	1957
		d.	d.	d.	d.	d.	d.	d.				
Fleece Wool												
2 and 5	Pick Teg, Ewe and Wether	104½	81¼	82¾	85	84¾	80½	77	123·3	97·6	95·0	90·9
6	Super Ewe and Wether	102½	79¾	80½	80¾	81½	79¼	77½	125·8	98·8	97·2	95·1
8	Fine Cast	90¼	68¾	68	68	68¼	66¾	65½	132·2	99·6	97·8	96·0
49	Pick Radnor and Cross-bred	87½	69½	70	70¾	71	69¼	68½	123·2	98·6	97·5	96·5
77	Extra Pick, Dorset Down	104½	83	84½	85¼	88¼	81¼	77¼	118·4	95·8	92·1	87·5
78	Pick, Dorset Down	103	81¼	81¾	82½	83¼	78¼	75¼	123·7	98·2	94·0	90·4
80	Pick, Dorset Horn	102½	80¾	81¼	81¾	82¾	77½	74	123·9	98·2	93·7	89·4
81	Selected Dorset Horn	99¼	78¼	77	76¾	76½	73	70½	129·7	100·7	95·4	92·2
Lambs Wool												
107	Shropshire Lamb	75	58¾	57	54¼	54½	51	45¾	137·6	104·6	93·6	83·9
117	Best Kerry Hill Lamb	75	57½	55	53½	52½	50	45¾	142·9	104·8	95·2	87·1
118D	Dorset Down Lamb	73¾	58¼	58	56¾	56	54	48¾	131·7	103·6	96·4	87·1
118H	Dorset Horn Lamb	78¾	62	63	62¾	63¼	61	57¼	124·5	99·6	96·4	90·5
108	Fine Cross-bred and Radnor Lamb	74	57¼	55	53½	52½	50	45¾	141·0	104·8	95·2	87·1
Guaranteed Average Price for All Wool		72·0	54·0	54·0	54·0	54·2	52·0	51·4	132·8	99·6	95·9	94·8

TABLE L

Winter-Fed Sheep. Distribution of Sales, Average Weight per Head and Price per lb. and per Head: by Weight Groups

	Total Sold	Per cent of Total	Average E.d.c.w.	Average Price	
				Per lb.	Per Head
	No.	%	lb.	d.	£
WEIGHT RANGE: E.D.C.W.					
Under 40 lb. . . .	142	1·9	37·5	41·2	6·44
40–48 lb. . . .	926	12·7	45·5	42·5	8·05
48–56 „	2,601	35·7	53·1	39·2	8·66
56–66 „	2,931	40·2	60·6	36·9	9·32
66–76 „	635	8·7	69·9	33·5	9·76
Over 76 lb. . . .	57	0·8	79·5	32·4	10·75
All groups . . .	7,292	100·0	56·5	37·9	8·92

TABLE M

Sheep Enterprise, 1954–55. Miscellaneous Costs.
Average Costs per Farm

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
(1) Sheep Equipment:	£	£	£	£	£
(*a*) Repairs:					
(i) Shearing gear. .	3·4	1·7	3·9	2·6	2·3
(ii) Other gear . .	·1	·4	—	1·9	6·2
(*b*) Depreciation . .	33·5	25·9	22·9	34·3	43·6
Total Equipment . .	37·0	28·0	26·8	38·8	52·1
(2) Veterinary Fees and Medicines, etc.:					
(*a*) Veterinary fees . .	1·1	2·6	1·5	6·7	2·7
(*b*) Medicines, etc.:					
(i) Worm drenches, etc.	6·8	9·3	11·0	13·8	10·4
(ii) Other drenches .	·3	·7	·4	1·4	·5
(iii) Vaccines and sera .	1·6	2·3	3·6	6·2	4·7
(iv) Penicillin, M. & B. etc.	·6	·2	·4	·8	·2
Total Veterinary and Medicines . . .	10·4	15·1	16·9	28·9	18·5
(3) Dips, Sprays, etc.:					
(i) Dip	8·1	8·1	9·0	9·8	9·9
(ii) Foot-bath, paste, etc. .	2·1	1·4	1·6	3·4	1·1
(iii) Fly sprays and powders	·6	·9	·4	·5	·1
(iv) Disinfectants . .	1·0	·2	·2	·2	—
Total Dips, etc. . .	11·8	10·6	11·2	13·9	11·1
(4) Minerals, Licks, etc. .	1·7	0·4	0·4	4·1	0·4
(5) Marketing Expenses:					
(*a*) Transport . . .	9·7	4·7	6·3	8·2	9·3
(*b*) Commission and Tolls .	20·9	11·0	14·7	15·5	18·7
(*c*) F.M.C. charges . .	6·4	4·7	8·7	20·9	10·8
Total Marketing . .	37·0	20·4	29·7	44·6	38·8
(6) Sundries:					
(*a*) Fuel	1·2	0·7	1·2	1·2	0·8
(*b*) Wool cord . . .	·9	·6	·8	—	—
(*c*) Marking fluid. . .	·2	·3	·4	·6	·6
(*d*) Small tools . . .	·1	1·1	·9	·2	·2
(*e*) Other	—	·2	—	·2	—
Total Sundries . .	2·4	2·9	3·3	2·2	1·6
Total Miscellaneous Costs .	100·3	77·4	88·3	132·5	122·5

TABLE N

Sheep Enterprise, 1954–55. Sheep Equipment
Average Value per Farm

	Somerset			Herefordshire	
	Autumn	Winter	Spring	Ross	Hereford
	£	£	£	£	£
(1) Folding Gear:					
(*a*) Netting	31·6	31·0	33·1	29·5	27·8
(*b*) Hurdles:					
(i) Wood	1·5	21·4	5·8	0·7	—
(ii) Iron	96·2	15·2	5·3	60·2	90·7
(iii) Creep	4·2	5·3	2·3	1·9	—
Total Hurdles	101·9	41·9	13·4	62·8	90·7
(*c*) Stakes	11·9	11·8	17·8	10·6	8·0
(*d*) Electric fencers	—	0·9	1·7	1·7	—
Total Folding Gear	145·4	85·6	66·0	104·6	126·5
(2) Feeding Troughs	29·7	30·4	33·4	40·5	49·0
(3) Hay Racks	15·0	13·4	14·7	40·8	66·2
(4) Corn Bins	2·9	1·2	1·1	1·6	0·5
(5) Dipping Tanks	—	3·1	—	—	—
(6) Foot-Baths	0·5	0·8	—	0·8	—
(7) Shepherds Huts	2·2	·7	1·3	4·2	8·6
(8) Shearing Gear	14·2	26·3	27·0	25·5	26·5
(9) Loose Tools, etc.	13·6	11·4	9·1	10·5	13·4
Total Equipment	223·5	172·9	152·6	228·5	290·7