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*Cattle -
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ABERYSTWYTH

DEPARTMENT OF AGRICULTURAL ECONOMICS

STORE CATTLE RAISING IN WALES: A SURVEY OF
CONDITIONS AND PRODUCTION COSTS.

by

B. H. ROBERTS, B.Sc.,

AGRICULTURAL RESEARCH BUILDING, PENGLAIS, ABERYSTWYTH

Price: One Shilling.

Some Economic Considerations.

Although the Agricultural Expansion Programme announced last year makes no direct reference to that important product of Welsh agriculture - Store Cattle, - the stress it lays on milk and beef implies that the rearing section of the industry is going to be subjected to considerable pressure. Price incentives, among other things, have brought increasing proportions of our land resources into the production of 'premiumed' commodities, and the supply of land for less attractive production has not only decreased in size but has also deteriorated in quality. The scarcity of manufactured feeding-stuffs has to some extent aggravated such a situation and brought about an increased tendency to push store cattle production into still poorer land. Although this tendency may not be altogether disadvantageous to the national interest, it is one whereby a vitally important farm enterprise is being increasingly concentrated on farms which have suffered from economic and natural disadvantages over a long period, and where resources are not organised in such a way as would ensure reasonably efficient production.

On the other hand, the extended emergency situation in which our country finds itself is bound to be reflected in our store cattle industry. We need to make the fullest use of all our land resources, and to produce all the meat and milk we can to meet our requirements for an adequate diet. Accordingly during the period of world food shortage at least, store cattle production, as a means of converting the product of poor land pasture into food for human consumption, is likely to be provided with some incentive. Indeed, measures like the Hill Farming Act, the Marginal Production Scheme and the Calf Rearing Subsidy are indications of "official" desire to bring forth from poor land areas the maximum contribution to livestock output. It seems, therefore, that present conditions allow for some scope in the development of a livestock plan on a large number of Welsh farms, although some might consider that the present state of affairs is transitory, and that when the feedingstuffs situation improves we shall face the old problems again. However, if the farmers are given an opportunity to effect long-term improvements on their holdings, they will be in a better position to withstand whatever setbacks may come their way in the future.

There are plenty of farms in Wales today where the complement of stock carried is not consistent with the concepts of efficient land management; they either are understocked, overstocked, or have a stock complement incorrectly balanced. This may be due to the price structure of agricultural commodities, the physical layout of the farm itself, the availability of suitable labour, or perhaps even ignorance on the part of the farmers. There is ample evidence of deterioration of upland pasture as a result of overgrazing with sheep and insufficient grazing with cattle. An upland farmer, faced with the alternative of cashing-in on a favourable market situation for sheep, may often dispense with cattle, although in the long run he will probably suffer from pasture deterioration as a result.

Marketing facilities for milk represent another factor which has influenced the organisation of a large number of Welsh farms. It is rather significant that between 1939 and 1945 an additional 20,000 producers entered the milk-selling market in England and Wales, representing 13 per cent of total producers. The two highest regional increases were those of North and South Wales - 33 and 27 per cent respectively. These additional producers brought less than 10 cows each on average, into the national milk-producing herds.* From the financial results of a group of Welsh farms on poor land, there is evidence of a similar change.** From 1941-2 to 1942-3 sales of milk per farm had increased by nearly 9 per cent, while production of milk had fallen by 3 per cent. The sale of butter was 40 per cent less in the latter year.

There is some evidence that the quantity and proportion of total production of milk fed to stock has been decreasing considerably. In 1925 it was estimated that about 10 per cent of the total milk produced in England and

* J. L. Davies: Milk in Wartime. Proceedings of Agricultural Economics Society, Vol. VII, No. 1, 1946.

** J. Pryse Howell: Changes in Organisation and incomes on some farms in Wales: 1942-42 and 1942-3. Welsh Journal of Agriculture, Vol. XVIII, 1945.

Wales was fed to stock, and that in Wales the proportion was of the order of 15 to 20 per cent.* A similar proportion was estimated for England and Wales in 1935-6, with proportions of 15 and 16 per cent respectively for North and South Wales.** Again, from reports on changes in organisation and income on Welsh farms between 1939 and 1943 we can conclude that the proportion of milk produced being fed to stock has been subjected to considerable reductions.† The following table has been constructed from data in these reports, the quantity of butter sold being converted into its milk equivalent on the assumption that $2\frac{1}{2}$ gallons of milk were used for each pound of butter.

Year.	Percentage of Milk Sold Liquid.	Percentage of Milk as Butter Sold.	Percentage available for other purposes (See Note below.)
1939-40	67.0	6.7	26.3
1940-41	85.2	6.2	8.6
1941-42	81.0	6.9	12.1
1942-43	83.2	5.2	11.6

Note. This will include milk and butter consumed on the farm, including that fed to stock. If the quantity consumed in the farmhouses remained fairly constant over the period the variation is largely in amount fed to stock.

It is also interesting to note that on the same Welsh farms in 1939-40 and 1940-41 the highest relative increase in receipts from dairy products occurred on the group of Cattle and Sheep (Poor Land) farms. The relative increases for the different type groups from 1939-40 to 1940-1 were ††:-

Type Group.	Per cent Increase in Receipts from Dairy Produce.
Cattle & Sheep (Poor Land)	36
Cattle & Sheep (Better Land)	21
Mixed Farms	21
Dairy Farms	13
All Farms	17

Alongside this change we find an improvement in the income accruing to these farms, and it is obvious that the change-over to selling of liquid milk has been responsible for this. The following table, constructed from the results of financial account analysis in this Department, demonstrates the trend in farm income over a six-year period.††

Index of Farm Income.

Type-Group.	Cattle and Sheep. (Poor Land).	Dairy Farms.
1937-38	100	100
1938-39	45	99
1939-40	122	181
1940-41	158	252
1941-42	230	264
1942-43	217	268

* Report on the Agricultural Output of England and Wales. Cmd. 2815. 1925. H.M.S.O.

** Agricultural Statistics, Vol. LXXI, Part II, 1936. H.M.S.O.

† J. Pryse Howell; Changes in Organisation and Incomes on Some Welsh Farms. Welsh Journal of Agriculture, Vols. XVII, XVIII.

†† J. Pryse Howell; Welsh Journal of Agriculture, Vols. XVI, XVII, XVIII, op cit.

It is obvious, therefore, that development in milk production and marketing policy has had a profound effect on the organisation of poor and medium land farms in Wales.

Nevertheless some might contend that producing milk for sale on these farms is not consistent with economic efficiency, and that the pooling of transport costs involves subsidising relatively inaccessible farms by the more accessible ones. To produce milk for sale under the conditions that exist on these upland farms must often be laborious if not uneconomical. The continuance or further development of such a policy will mean that we shall need a very much larger herd to meet the nation's demand and this will involve a reduction of land area available for other processes. The nation may demand a more efficient national dairy herd, which can produce a gallon of milk at a lower cost than in recent years. This would create the problem of how to stimulate on these high-cost farms, alternative forms of production which would have an income-earning attraction at least equal to that attributed to that of liquid milk. There is no doubt that cases do exist where a poor land farm might be more appropriately engaged in rearing stores for a lowland dairy or beef farm, making possible the release of land on the latter for actual milk or beef production and thus increasing output with economic advantages to the consuming public.

Changes in the Cattle Population of Wales.

Between 1930 and 1946 the total cattle population of Wales (including Monmouth) increased by about 18 per cent. There was a marked change also in its constitution, as the table that follows will show. The number of breeding cows and heifers increased by almost one-third, and that of "other cattle" over 2 years of age by one-half. Only the numbers of young cattle under one year old, showed any decrease.

Changes in the Cattle Population of Wales
(including Monmouth) (1930 = 100.)

Class of Stock.	: 1930	: 1935	: 1939	: 1946
Cows & Heifers in Milk/in Calf	: 100	: 107	: 109	: 132
Other Cattle:	: :	: :	: :	: :
Under 1 year*	: 100	: 97	: 102	: 91
1 - 2 years	: 100	: 112	: 118	: 104
Over 2 "	: 100	: 111	: 115	: 156
Total of above Cattle	: 100	: 106	: 110	: 118

* Excluding Bulls being reared for service.

No recent figures have been published on the distribution of the cattle population between dairy and beef herds. Harry estimated that in December 1936 nearly half the total cattle in Wales were in beef herds, but that nearly two-thirds of the cows and heifers in milk were in dairy herds.* In 1934 there were only 9,300 registered milk producers in Wales, compared with 25,700 in 1947. The relative disposition of the cattle population has therefore changed considerably since the 1936 census, although possibly many more farms are engaged in the dual production of milk and beef stores.

The changing structure of the cattle population may be further demonstrated by reference to relative numbers of store cattle and female breeding cattle. For Wales as a whole numbers of store cattle relative to those of breeding cows and heifers have been falling appreciably, although an opposite trend will be seen in some counties. An attempt has been made in the following table to trace the change in the numbers of store cattle over 1 year old, relative to the numbers of female breeding cattle, for each Welsh county.

* E. Ll. Harry: Milk Selling and Cattle Raising in Wales. Welsh Journal of Agriculture, Vol. XIII, 1937.

Numbers of 'Other Cattle' over 1 year old per 100
Cows and Heifers in Milk and in Calf.

County,	(Average for 5 year periods.)		1945-47. Average for 3 years
	1928-32.	1935-39.	
Anglesey	133	151	137
Brecon	73	72	82
Caernarvon	63	66	63
Cardigan	82	74	55
Carmarthen	53	47	41
Denbigh	80	79	65
Flint	49	47	43
Glamorgan	59	59	58
Merioneth	97	103	113
Monmouth	83	84	72
Montgomery	113	105	100
Pembroke	95	87	64
Radnor	113	121	139
Wales (Inc. Monmouth)	79	76	68

The most notable changes are those in Cardigan and Pembroke, where milk-selling has developed considerably at the expense of cattle rearing and fattening. The graziers of Anglesey and the established rearers of Radnor and Merioneth appear, so far, to have resisted the encroachment of milk-producing cattle, and on farms in these counties the numbers of store cattle, relative to the cow and heifer population, have been more than maintained over the last twenty years. If the incentives for concentrated production of 'premiumed' commodities on lowland farms continue we might expect to find a continuing tendency for store cattle to be segregated into poor land farms - acting as a reservoir for the lowland farms.

The average complement of store cattle on Welsh farms in June 1947 was 9 to 10, Radnorshire having the highest county average at 13 per holding. The relative importance of store cattle in different areas can be roughly estimated if all stock are converted into cattle units, and proportions of total units represented by store cattle in the different areas are compared. In recent years store cattle in Wales have represented about 20 per cent of the total stock equivalent, extreme cases being Anglesey with about 40 per cent and Brecon with about 13 per cent. In the latter county, of course, sheep constitute an appreciable proportion of the livestock population. In fact, in the hill sheep counties of Brecon, Merioneth and Radnor sheep represent an equivalent of 60 per cent of the total livestock complement. Whether the existing constitution of the stock population in these counties is an ideal one may be questionable, and there are sometimes reasons for believing that the proportion of stock equivalent in the form of cattle could be increased with advantage, particularly from the point of view of better pasture utilisation. In 1944 the distribution of total stock in various areas of Wales and other parts of Britain was as follows:-

Distribution of Stock Population in 1944 (Expressed as
percentage of Total Cow Equivalents.)*

Type of Stock.	Brecon.	Merioneth.	Radnor.	Wales.	England.	Scotland.
Cows and Heifers (in Milk and in Calf)	18	17	17	34	46	28
Other Cattle (exc. Bulls & Bulls Calves reared for service)	13	15	19	20	27	24
Sheep	60	64	56	36	14	39
Other Stock	9	4	8	10	13	9
Total	100	100	100	100	100	100

* See Note on Costing Principle in Appendix II for Scale used in converting Livestock into Cow Units.

From the end of the last century the general trend of the livestock population of Wales in relation to the extent of its cultivated area, has been upwards. This has been accompanied by a significant change in the structure of the cattle population. The following table, reproduced from the work of Ashby and Evans*, demonstrates the nature of this change.

Distribution of Cattle Population in
Wales (as percentages.)

Year.	:	:	Other Cattle,	
			Under 2	Over 2
		Heifers.	years.	years.
1874	:	39.4	41.5	19.1
1891	:	38.8	44.3	16.9
Average 1911-13	:	27.6	49.2	13.2
" 1937-39	:	42.6	47.2	10.2

The position was influenced by changes in public demand for the meat of younger cattle, but this is only one of many factors that have been operating and have affected the organisation and extent of store cattle raising in Wales.

Since 1944 information has been available on the number of calves born during each month. These figures indicate a small drop in the total number of calves born on Welsh farms in recent years, a tendency which appears to be more marked in the rearing counties of Anglesey, Brecon, Merioneth and Radnor than in Wales as a whole. It has to be borne in mind that even if the number of births fall the net number in the cattle population may show a different trend because relatively more cattle may have been imported or retained on Welsh farms than has been the case in the past few years. In the absence of reliable information it is impossible to say whether the drop in the number of calves born has actually been accompanied by a decrease in the number of cattle going over the border or by an increase in importations.

An examination of the seasonal distribution of calf births during the three years 1944-5, 1945-6 and 1946-7 reveals a marked increase in the autumn peak. The spring peak was highest in 1945-6 and lowest in 1946-7; the latter was probably affected to some extent by weather conditions.**

Costs of Producing Store Cattle.

Investigations were undertaken by the Department in 1942-3, 1943-4 and 1946-7 into the costs of store cattle production in three areas of Wales. There were two main groups of farms in these investigations:

- (a) those rearing calves by suckling - normally one calf per cow, and producing beef stores;
- (b) those where calves were reared on the bucket and where stores were destined for beef and dairy herds.

For the purposes of these enquiries the cattle to be costed on the farms were grouped according to age, and, in the case of farms rearing calves on the bucket, autumn-born and spring-born cattle were costed separately. Where rearing was done by suckling, the method adopted in costing calves up to the weaning stage (approximately six months of age) was to take costs of the rearing herds for a full year and to credit these with the value of milk disposed of for purposes other than calf rearing. Each investigation was designed to cost the different age-groups in the one year, and no attempt was made to follow up any particular "bunches" over several periods.†

* Ashby and Evans: The Agriculture of Wales, University of Wales Press 1944.

** See Graph in Appendix II.

† See Note on Costing Principle at end of Appendix II.

This report is mainly concerned with the results of the investigation undertaken during the year May 1946 to April 1947. In some tables data for the corresponding surveys of previous years are shown for comparison purposes.

'Suckling' Group.

Information was obtained for 30 herds in this group, and these were confined to a typical rearing area near the Anglo-Welsh border. The farms had very much in common in their general organisation, depending to a very large extent on family labour. The system of rearing was almost invariably that of 'one calf per cow'. Calves are born in the spring and suckle the dams out on grass during the summer and early autumn. It is a system which generally produces high quality store cattle of the Hereford breed (with occasional Shorthorn-Hereford crosses) on poor to medium land. On the whole the farms were fairly large, with an average size of 306 acres, ranging from 125 to 703 (the latter, however, included 400 acres of rough grazings). Cattle and sheep constituted the bulk of the saleable products of these farms. Their average stocking was:-

Breeding Cows	19
Calves	19
Other Cattle	21
Sheep	240
Pigs	2 to 3
Poultry	132

A substantial poultry flock appears to be a common feature of these farms and this provided a useful supplementary income for the household.

Oats figures prominently among the crops on each farm, and considerable reliance was placed on the turnip and swede crop, mainly on account of its keeping quality and value for sheep folding. Sheep have first call on the root crops generally, and the winter diet of breeding cows is often nothing more than straw and hay, while the younger bunches of store cattle get as much oats-on-the-straw as can be spared for them.

The age-distribution of heifers and cows was not very unlike that found for some Welsh dairy herds in 1941-43, or for a similar group of rearing herds investigated in 1942-3. The comparative age structures were -

	:		:		:
	:	'Suckling' Herds.		:	
Lactation	:	:	:	Dairy Herds	:
or Calf.	:	1942-43.	1946-47.	1941-3*.	:
	:	:	:		:
1st	:	20	20	25	:
2nd	:	19	20	18	:
3rd	:	15	16	16	:
4th	:	16	14	16	:
5th	:	13	13	10	:
6th & over	:	16	17	15	:
	:	:	:		:

As far as the herds under investigation in 1946-7 are concerned there is reason to believe that it was customary in the past to sell out cows at a younger age than in recent years. It was only young cows that would fetch any reasonable prices. With the war-time development of a market for older cows, however, many of the rearers have felt justified in retaining cows for a long period. An analysis of sales shows that altogether 73 cows were sold, and that 37 of these were barreners. The distribution of the numbers sold was:-

* Howell, Phillips & Griffiths: Comparison of Costs of Milk Production. Welsh Journal of Agriculture, Vol. XVIII. 1945.

	Percentage of Total Number Sold.	Percentage of Barreners Sold.
1st Calvers	18	22
2nd "	21	11
3rd "	14	11
4th "	10	5
5th "	7	0
6th "	4	3
7th " & over	<u>26</u>	<u>48</u>
	<u>100</u>	<u>100</u>

The relative importance of sales of calves and store cattle is shown in the next table:

Percentage Distribution of Sales.

<u>Group.</u>	<u>Numbers.</u>	<u>Value.</u>
Calves 0 - 6 months	6	2
" 6 - 12 "	8	6
Other Cattle:		
12 - 18 months	29	28
18 - 24 "	32	34
24 - 30 "	19	22
30 - 36 "	<u>6</u>	<u>8</u>
	<u>100</u>	<u>100</u>

Cattle from one to two years old, therefore, account for the bulk of cattle receipts; even if sales of cows are included, they still account for more than half the cattle receipts.

The groups costed on these farms were:-

- (a) Calves 0 - 6 months old
- (b) Calves 6 - 12 " "
- (c) Store Cattle 1 to 2 years old
- (d) Store Cattle 2 to 3 " "

(a) Calves up to 6 months old.

As explained previously, the cost of producing calves by the suckling method on the farms in this investigation is that of the breeding herd over a full year, with adjustments for any credits due, plus the extra feeding and management work directly attributable to the calves themselves. A total number of 546 calves were reared up to six months old; 568 had been born alive, 33 were sold before reaching this age, and 24 were purchased; 13 calves died during the suckling period. The average number of cows for rearing was 615; some of these proved barren and a few were hand-milked to supply milk for the household or, in one or two cases, for sale.

The average cost per calf reared during 1946-7 was nearly £14, compared with about £9.18. 0 for a similar group of farms in 1942-3. Details of these costs are shown in Appendix I, Table I.*

Depreciation in the breeding herd for 1946-7 was considerably more than for the 1942-3 sample, mainly on account of the higher value placed on the cattle and also of a higher death rate.

The calf at six months old on these farms was, in general, a very well-reared one, and there is hardly any justification for comparing its cost at this stage with its market value. The standard of early rearing to this stage will determine the future development of the calf, and the benefit of the 'good start' reflects itself in the value of the animal at a later stage. The cost of feeding the rearing cows - particularly in the winter period -

* All numbered Tables referred to appear in the Appendices to this report.

accounts for a very large proportion of the calf's cost. These cows were not eligible for the ration of concentrates (manufactured feed) that dairy cows get. Their diet was a relatively simple one, made up almost entirely of home-grown foods. Practice varied somewhat from herd to herd, more particularly in the quantity rather than in types of foods fed. While cows were dry in winter the feeding very often was on a low plane. In a few cases cows were confined to a feed of hay and straw only.

The first six months of the calf's life are so important that we may be justified in examining costs at this stage in rather more detail than is intended for those of other age-groups.

Several factors will affect the cost of rearing. In the present sample it is impossible to study each factor in isolation with any great accuracy. Some of these factors co-exist, sometimes as opposing elements; e.g. a high cost of herd depreciation may be associated with efficient utilisation of labour or feedingstuffs. In Table 6, of Appendix I are shown results of herds grouped according to range of cost per calf; this table may not give the absolute extent of the influence of these input factors, but it does give some indication of how the total costs of production vary in accordance with some of them.

It is obvious that depreciation of breeding cattle has had an appreciable effect on the costs of producing the calves. The cost of foods in Group 4 of Table 6 has been influenced by the very heavy feeding of cows in two of the farms. A large credit for milk sold reduced the cost of calves considerably on one farm in Group I. The high cost of depreciation in Group 4 was accounted for partly by a relatively heavy death-rate in cows and partly by a lower realisation value for cows sold. The average figures for the age-group were:-

Group.	Total Cost per Calf.	:Average price: Number of Cow	
		:realised per :deaths per 100	
		: Cow sold. : Calved reared.	
		: £. s. d. :	
1. Less than	£11.10.0	: 26.11. 0 :	5.3
2. £11.10.0 to £14. 0.0		: 24.11. 0 :	2.8
3. £14. 0.0 to £16.10.0		: 23. 2. 0 :	7.3
4. Over	£16.10.0	: 19. 9. 0 :	9.5
		: :	

The size of the enterprise obviously has some effect on the average cost per calf. On those farms where 25 or more calves were reared the average cost of labour per calf was £4. 5. 3. while on farms rearing 15 calves or less it was £6.15. 3.

Working on a different costing method, Jeffery estimated the cost of six months-old calves, reared by unrestricted suckling on some Devonshire farms, at an average of £16.13. 1 per head*. It was estimated that each calf on an average obtained 140 gallons of milk by suckling, a figure which was based on the yielding capacity of cows; the cost of this milk per calf was £12. 5.11 or roughly 1s.9d. per gallon. The calves were autumn-born and therefore suckling during late autumn and early winter. They were thus burdened with the cost of winter-produced milk. It is interesting to note that cattle reared on the restricted suckling method on the Devonshire farms gave the best results at 2 years old.

(b) Calves 6-12 months.

Calves of this age will generally be indoors. They will have been completely weaned, and their diet corresponds fairly closely to that of breeding cows in winter.

From the six month-old stage onwards, total costs include costs of deaths as a separate item. They are calculated from the estimated cost

* R. R. Jeffery: An investigation into costs of rearing cattle on three areas of Devon. University of Bristol, Farmers' Report No. 45. 1946.

of casualties at time of death. When total costs per animal are being calculated the divisor used represents the average number of animals kept during the period of investigation, including the casualties which have been on the farms for part of the period.

There were a number of transactions with calves of this age, but the net effect has not been brought into the general cost structure of rearing. Thirty of the calves sold during the period realised over £30 per head; these were mainly pedigree bull calves. It is not considered appropriate that the cost of raising calves (or cattle in subsequent age-groups) should be reduced by profits on such transactions.

The average costs per calf arrived at in 1946-7 and 1942-3 are shown in Table 2, Appendix I. The frequency distribution of average net cost per calf shows a greater number of cases in the range of four to six guineas than in any other.

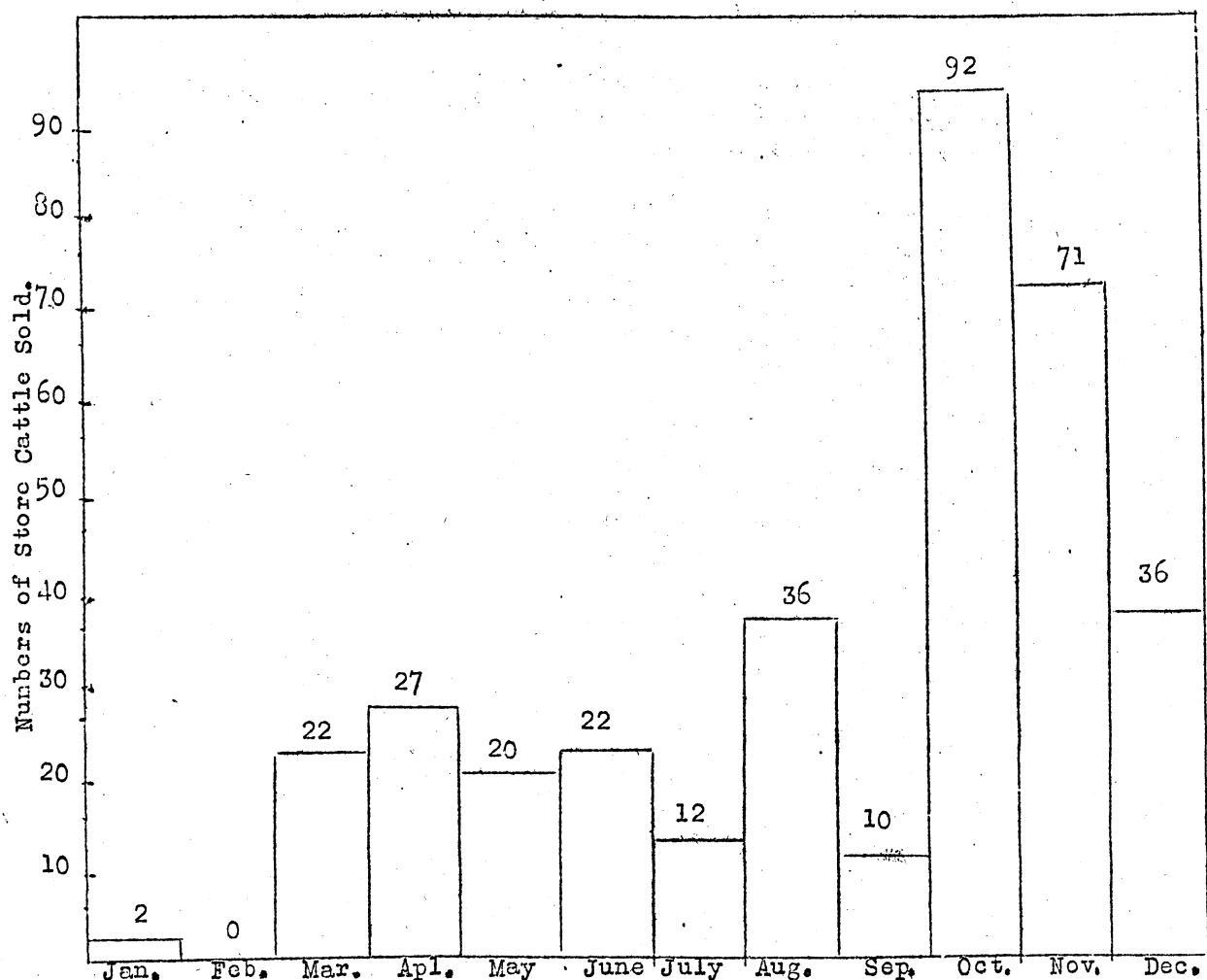
<u>Range of Cost</u> <u>(Guineas per Calf.)</u>	<u>Number of Cases.</u>
4 - 6	9
6 - 7	6
7 - 8	6
8 - 9	1
9 - 10	2
10 - 12	2
12 - 14	3
Over 14	1
	<u>30</u>

The bulk of the cases fell in the range of four to eight guineas per calf. Extreme cases of high costs appear to be due to the incidence of death and heavy feeding. On the whole, therefore, the range in the per head costs of raising calves from 6-12 months old on these farms is not very wide. It is necessary to bear in mind that the end product itself - the yearling calf - is not uniform in character, and individual costs should, strictly, be measured against the value of the product ultimately obtained. However, the valuations of yearling calves in the various cost range groups shows comparatively little variation. The nine lowest-cost farms gave an average valuation of £20 per calf, while the nine highest-cost farms gave an average valuation of £19 per calf. These valuations were provided by the farmers themselves, and based on their knowledge of the individual animals and of the state of the market.

(c) Store Cattle over 1 year old.

Relatively few stores over 2 years old were kept on the farms in this investigation. The winter diet for these groups again was a simple one, being on an even lower plane than that given to the breeding cows and yearling calves. The cattle would be on pastures all through the summer, and costs for the grazing season show little change between 1942-3 and 1946-7. In fact, the cost of raising cattle from 12 to 18 months during the summer of 1946 was less than that estimated for the corresponding period of 1942. In Table 3 (Appendix I) seasonal costs are shown for the different 'age bunches' of cattle, and Table 5 gives details of the constitution of the average diet of all herds.

The diagram below shows the monthly distribution of sales of store cattle over 1 year old on the farms in the investigation. This reveals the characteristic autumn peak, when relatively large numbers of 1½- and 2½-year-old cattle are offered for sale.



(d) Total Costs up to $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ years of age.

As mentioned earlier in this report, these investigations of store cattle production costs have been confined to one year each. In aggregating costs of each age-group we get some indication of costs of beasts at the various marketable ages. Farmers are interested to know what at these ages, the cost-price relationship is. In view of the fact that sales are heaviest on these 'suckling' farms when cattle are $1\frac{1}{2}$ and $2\frac{1}{2}$ years old, costs are estimated at these stages and also at the 'two-year-old-stage' when there is a 'spring' market for heifers. In this investigation it has not been possible to segregate bullocks and heifers for separate costing. Table 4, Appendix I is the result of aggregating costs of each age-group ($\frac{1}{2}$ -year) to the three stages. The 1942-3 investigation indicated average costs at $1\frac{1}{2}$ and 2 years old as £17. 5. 0 and £22 respectively on a group of 'suckling' farms; the Devonshire results for autumn born cattle reared by unrestricted suckling indicated a cost of £33.17. 6 per head at 2 years old in 1945.

Bucket or Pail-Feeding Group.

The bucket-feeding system of rearing calves is more widely distributed throughout Wales than the suckling system and the existing premium on liquid milk selling has subjected it to a great deal of experimentation.

Information was obtained during 1946-7 from 31 Welsh farms where this system was practised. These were poor- to medium-land farms with an average area of 220 acres (including rough grazings). Only about 10 per cent of the area of these farms was devoted to tillage crops, and over half the total area was occupied by rough grazings. Oats and roots were the characteristic tillage crop.

Practically all the farms had a flock of sheep, but a number were keeping 'tack' sheep only in winter. Poultry flocks were not as

large as on 'suckling' farms. The average complement of cattle was made up of:-

11 Breeding Cows,
11 Calves,
15 Other Cattle.

Over the whole year the probable average size of the adult breeding sheep flock was between 100 and 150. The chief saleable products were (a) Sheep, in 43 per cent of cases (b) Milk, in 29 per cent of cases, (c) Store Cattle, in 29 per cent of cases. Store cattle, however, represented the second most important sale product in 60 per cent of cases.

The farms could be divided into two distinct groups, both on geographical grounds and according to breeding practice. In one group a characteristic feature is that the cattle are mainly colour-marked beef types, while in the other they are almost entirely nondescript with Welsh Black blood predominating in some cases.

The product of the first group will be a more uniform type of beast, suitable for a definite purpose. The product of the latter group will vary considerably, and depends very largely on how far the farm policy has been directed towards production of milk for sale and on the situation of the farm itself.

(a) Calves 0-6 months old.

Spring- and autumn-born calves have been costed separately. It was not possible to ascertain from the farmers the probable values of calves at birth. So many factors might determine their 'opportunity' value, and so many difficulties would be met in costing them up to birth, that it has been decided to include in the costs a nominal figure of £2 per head as representing value at birth. Table 7, Appendix II, gives details of costs up to 6 months old for autumn- and spring-born calves.

It will be seen that the autumn-born calves have cost £3 per head more than the spring-born ones, despite the fact that the latter receive more whole-milk. Milk fed to spring-born calves, however, has been produced during the grazing season, and costs about one-half as much as the winter-produced milk which the autumn-born calves would consume.

A previous survey of costs carried out by this Department in 1943-4 showed the following corresponding results:-

	<u>Autumn-Born Calves.</u>	<u>Spring-Born Calves.</u>
Average Cost per Calf at six months (inc. £2 value at birth)	£11. 3s. 1d.	£9. 0s. 8d.
Average Quantity of Milk fed per Calf: whole	59 gallons	60 gallons
skin	20 "	29 "

In Tables 13 and 14, Appendix II, costs are shown for groups of farms in the sample arranged according to quantity of milk fed per calf, and according to the range of total costs. This analysis brings into relief the profound influence on total costs of the feeding practice adopted, and particularly the extent to which whole milk is fed.

It is not surprising, therefore, that efforts at economy in calf production have been directed towards a reduction in the amount of milk consumed. It should be borne in mind, that in this investigation milk fed to calves has been charged at estimated cost of production, during the appropriate season, on Welsh farms. If the market value or 'opportunity' cost had been applied the tendency for high calf costs to be associated with quantities of whole milk fed would be considerably more marked.

On the whole, the type of calf encountered at this stage of growth on these farms is not as good - in constitution at least - as in the 'suckling' herds. They were not offered for sale at this stage (only one calf under 1 year old was actually sold on these farms during the investigation year). But farmers were asked to value calves on hand which had attained six months of age. The average value given for autumn-born calves (in spring) was £9, and that for spring-born calves (in autumn) was just under £8 per head. Both figures are well below the corresponding figures of costs. Valuations of the white-faced calves tended to be higher, averaging £11 and £9 per head for autumn-born and spring-born calves respectively. But the costs of producing these latter calves also tended to be higher than average costs for the whole group.

The range in individual farm costs of rearing was very wide, the lowest and highest costs being -

	<u>Autumn-Born.</u>	<u>Spring-Born.</u>
	£. s. d.	£. s. d.
Lowest	5. 2. 6	3.18.10
Highest	22. 5. 8	19.10. 4

Feeding and labour costs were of course largely responsible for variations; herds with the highest total costs per calf generally had the highest feeding costs, and those with the lowest total costs also had the lowest feeding costs, per calf.

Out of a total average of 291 calves reared there were 13 deaths, 11 of which occurred before the calves were 2 months old.

(b) Calves 6-12 months.

This group, again, contains two separate "bunches", one being reared during the winter and the other during the summer period. The spring-born calves had been almost completely weaned before this stage was reached, while some of the autumn-born calves continued to have some skim milk from the pail. Those born in autumn were now able to make use of some grazing, and this fact shows up considerably in the relative costs of rearing for this period of their lives. Comparative costs are shown in Table 8, Appendix II.

The fact that most of the autumn-born calves at this stage would be out on pasture accounts for the slighter variation in these individual farm costs than in those of the indoor-fed calves. The highest cost of £8. 9.11 (for autumn-born calves) was due to heavy feeding of meals and a high grazing cost. Where the total cost per calf was lowest - 16s.7d. - the calves had no hand-fed foods at all. However, there was a considerable difference in the value of the product at the end of the year, the high-cost calves showing an average valuation of £10 per head more than the low-cost ones. The high cost was also associated with the better type of animal. With the spring-born calves the variation was from £3.11. 5 to £17.10. 4 per calf, the highest total rearing cost being associated with the highest feeding cost, and the lowest total rearing cost with the lowest feeding cost.

(c) Store Cattle over 1 year old.

As was the case with the 'suckling' herds, the chief products of the cattle sales on these farms are the 1½- and 2-year old bullocks. Some of the heifers would be retained for herd replacements, and some sold for replacement in other herds.

Autumn-born cattle attain the age of 1½ years in spring, while spring-born cattle attain it in the autumn. Costs for the various age-groups have therefore been collected for the appropriate half-yearly periods, and are presented in Tables 9 and 10, Appendix II.

From Table 12, Appendix II, it will be seen that the older cattle were consuming less hand-fed foods than the younger ones. Some of the 2- to 2½-year-old cattle were out all winter on pasture. Not one of these older cattle died, and this is more than can be said for any other group of cattle in the investigation.

Variation in total costs per animal between farm and farm was not so great with the older groups of cattle as with calves. Incidence of deaths and small size of 'bunches' were the most important factors associated with high production costs. If the costs in the group are compared with those of corresponding 'bunches' of cattle in the 'suckling' herds, costs of raising stores from 12 to 18 months in the latter will appear to be about 10s. per head less; on the other hand, 'suckling' farms incurred a cost of 28s. a head more in raising cattle from 18 to 24 months (winter period) than did those practising bucket rearing.

(d) Total Costs up to $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ years of age.

In view of the marketability of cattle at these various stages, costs have been aggregated on the same principle as that applied to the 'suckling' groups. Of a total number of 85 cattle and calves sold off these farms, 36 were sold at the 1½-year-old stage, and 40 at the 2-year-old stage. Costs at these stages are set out in Table 11, Appendix II.

An analysis of the sales on these farms shows that autumn-born cattle at $1\frac{1}{2}$ years old were selling at prices between £20 and £30, with an average around £24; these were, of course, spring sales and the cattle were mainly white-faced bullocks suitable for fattening. Sales of spring-born cattle at $1\frac{1}{2}$ years (in autumn) yielded prices varying from £10 to £25, with average of £18 to £19. Two-year-old cattle sold in the autumn yielded prices varying from £10 to £30, with an average of £20, while two-year old cattle in spring fetched prices of £20 to £35, with an average of £26. The few $2\frac{1}{2}$ -year-old cattle sold in spring fetched prices between £22 and £31.

From the results of the various surveys undertaken by this Department costs in 1946-7 compared with 1943-4 show the following changes:-

Autumn-born cattle	1½-years old	-	increase of	£5	per head.
"	"	2	"	"	£5 " "
Spring-born cattle	1½-	"	"	"	£4 " "
"	"	2	"	"	£6 " "

Some Considerations of Future Prospects in Store Cattle Production.

It will be obvious from the results of the investigations undertaken that store cattle production in general is not an attractive enterprise from the financial point of view. Despite its relative importance in the agricultural economy of this country, little inducement to practice it was given to farmers until very recently. Even the latest offers of assistance in grants and subsidies - arising very largely from food-and-dollar-scarcity motives - will probably be regarded by many as likely to do little towards encouraging a greater output of cattle. Cattle rearers, more than any other group of agricultural producers today, need a long-term guarantee of safeguards that will enable them to establish a policy of building up a cattle population which can utilise all the available resources economically for general satisfaction.

The large number of small enterprises involved, and their wide geographical distribution, add substantially to the problems of reorganising store cattle production on Welsh farms. Our herds, particularly on poor- and medium-land, are very nondescript, with the characteristic exception of the border area, where production of beef stores depends on identification of animals by colour-marking. Too many farms are producing store cattle which are suited neither for beef nor for dairy herds. In the existing state of agriculture and farm organisation, however, the process of store rearing up to now has necessarily had to assume some flexibility, to enable those engaged in it to adapt their policy - particularly their breeding policy - to changing circumstances.

The 'drive' for clean areas will no doubt affect the future distribution of store cattle raising. Attested dairy herds will be increasingly main-

tained by home-reared replacements, and typical poor-land rearing farms may find a narrowing outlet for female stores. What prospects there may be for adopting co-operative or other methods whereby poor land farms may provide agistment for well-bred dairy herd replacements for 'intensivo' dairy farms, it is difficult to say; but this may be an avenue worth exploring. It is certain, however, that increasing efficiency in milk production will allow no room for entry of indiscriminately bred heifers from rearing farms, and the latter may consequently have to adopt a method of providing keep for better bred dairy stores or else confine themselves more to production of beasts for beef herds.

The significance of food costs in the structure of store cattle costs directs attention to possible means of increasing the efficiency of feeding. Here again there appear to be possibilities of applying co-operative principles, such as those of mass production of dried grass, that would solve feeding problems on poor-land farms. Possibilities of introduction of new practices, like the growing of foggage*, might also lend itself to conditions on many rearing farms.

It may be wondered how so many small Welsh farms producing store cattle have managed to carry on under such precarious conditions as are indicated by the study of costs - and costs in relation to prices - undertaken in Wales. These costs, however, include remuneration of family labour at the regulation rates, and practically all the labour involved was that of the farm family. It is implied, therefore that in many cases store cattle rearers have had to contend with a remuneration for their labour which is not at par with the responsibilities they have to undertake, and which is too often below the 'official' remuneration of agricultural labourers.

The new subsidy payable on calves born between August 1947 and September 1949 will help to make up a deficiency on many farms, but unless the numbers are large the total supplementary income will make only a slight difference to their general financial situation. Its period of application is probably too short for it to have any great effect on the cattle population in the next few years, while in any case many who have to buy calves to replace losses on their holdings find that prices have been pushed up by an amount almost equal to this subsidy. There is no guarantee that this subsidy finds its way to the appropriate point; indeed, it has already added to the multiplicity of marketing transactions which have been so characteristic of our store stock industry in the past. Its conditions for eligibility of calves suitable for rearing to beef and dairy cattle should provide some stimulus to better feeding practices, but the very limited period of its duration does not give much opportunity for a great deal of reorganisation in this direction, nor for any attempts at measuring its own possible effects. The subsidy does, however, assist in so far as it enables some small-scale farmers in Wales to withhold sale pending a satisfactory price from buyers, and to avoid the embarrassing position, so common in the past, of having to sell stock in order to get ready cash for urgent purposes. If it allows some rearer to undertake long-term improvements that might enable them to increase the efficiency of their future production, it will have served a very useful purpose.

* Note on 'foggage'.

For an authoritative account on the value of 'foggage' see articles in the Journal of the Ministry of Agriculture for June 1948 by Dr. William Davies and Mr. G. P. Hughes. The emphasis on extending the grazing season by these authors indicate considerable advantages in this method of grass conservation. The growing of foggage is regarded as an integral part of the whole aspect of grassland management on a farm. It does seem to offer possibilities of overwintering more cattle and thus, of considerable saving in feeding expenses, besides having a beneficial effect on the health of cattle.

APPENDIX I.

COSTS OF RAISING STORE CATTLE ON FARMS WHERE CALVES
ARE REARED BY THE SUCKLING METHOD. ALL COSTS
ARE PER ANIMAL.

Table 1.

Costs of Calves up to 6 months old. Spring-Born.
 (Being costs of Rearing Herd for full year plus
 direct costs on calves).

	1946-7.		1942-3.	
Number of Herds	29		37	
Number of Calves Reared	546		583	
	£. s. d.	£. s. d.	£. s. d.	£. s. d.
<u>Costs of Food:</u>				
Purchased Concentrates	0. 1. 4		0. 0. 3	
Home Grown "	0. 4. 11		0. 19. 8	
Oats on the Straw	1. 7. 5			
Hay	1. 13. 0		1. 19. 2	
Straw	1. 6. 11		1. 13. 0	
Roots	0. 12. 9		1. 4. 11	
Grazing	3. 9. 11		2. 11. 2	
Total Foods & Grazing	8. 16. 3	8. 16. 3	8. 8. 7	8. 3. 7
Deduct Manurial Residues*	-	-	-	1. 3. 5
Net Cost of Foods & Grazing		8. 16. 3		7. 5. 2
Direct Labour		5. 4. 1		3. 16. 0
Depreciation of Herd		2. 11. 4		0. 9. 2
Sundry Costs		0. 5. 5		0. 4. 7
Calf Purchases		0. 3. 10		0. 2. 7
Total Gross Costs		17. 0. 11		11. 17. 6
<u>Deduct:</u>				
Sales of Calves	0. 9. 1		0. 4. 1	
Milk not consumed by Calves	2. 11. 11	3. 1. 0	1. 15. 7	1. 19. 7
Total Net Costs	-	13. 19. 11	-	9. 17. 11

* In 1946-7 Costs of each type of food shown are net; this
 applies to all tables.

Table 2.

Costs of Calves 6-12 months (Winter Period).

	1946-7.	1942-3.
Average No. of Calves	564	583
	£. s. d.	£. s. d.
<u>Foods:</u>		
Purchased Concentrates	0. 1. 8	0. 0. 9
Home-Grown "	0. 5. 9	1. 15. 4
Oats on the Straw	1. 19. 9	
Hay	2. 1. 10	1. 12. 11
Straw	0. 1. 10	0. 9. 3
Roots	0. 9. 0	0. 13. 6
Grazing	0. 1. 4	0. 2. 11
	5. 1. 2	4. 14. 8
<u>Less Manurial Residues</u>	-	0. 10. 1
Total Foods and Grazing	5. 1. 2	4. 4. 7
Direct Labour	2. 10. 8	1. 3. 3
Sundry Costs	0. 3. 2	0. 1. 10
Cost of Deaths	0. 5. 8	-
Total Costs	8. 0. 8	5. 9. 8

Table 3.

Costs of Store Cattle over 1 year old, 1946-7.

	Cattle 1 - 2 years old.			Cattle 2 - 3 years old.		
	Summer	Winter	Whole	Summer	Winter	Whole
	Period.	Period.	Period.	Period.	Period.	Period.
Average No. of Cattle Units	479	298	-	201	34	-
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
<u>Foods:</u>						
Purch. Concentrates	-	0. 1. 11	0. 1. 11	-	-	-
Home Grown "	-	0. 0. 2	0. 0. 2	-	-	-
Oats on the Straw	-	1. 10. 8	1. 10. 8	-	0. 10. 0	0. 10. 0
Hay	-	1. 3. 10	1. 3. 10	-	1. 12. 6	1. 12. 6
Straw	-	0. 16. 1	0. 16. 1	-	0. 16. 5	0. 16. 5
Roots	-	0. 16. 7	0. 16. 7	-	0. 0. 8	0. 0. 8
Grazing	1. 2. 10	0. 10. 11	1. 13. 9	2. 0. 6	1. 4. 7	3. 5. 1
Total Foods and Grazing	1. 2. 10	5. 0. 2	6. 3. 0	2. 0. 6	4. 4. 2	6. 4. 8
Direct Labour	0. 7. 2	2. 4. 2	2. 11. 4	0. 11. 11	2. 12. 2	3. 4. 1
Vet & Medicine	0. 0. 3	0. 0. 5	0. 0. 8	0. 0. 9	0. 0. 2	0. 0. 11
Transport	0. 2. 3	0. 3. 6	0. 5. 9	0. 3. 7	0. 0. 4	0. 3. 11
Equipment and Buildings	-	0. 1. 4	0. 1. 4	-	0. 0. 6	0. 0. 6
Cost of Deaths	0. 0. 9	0. 9. 2	0. 9. 11	-	-	-
Total Costs	1. 13. 3	7. 18. 9	9. 12. 0	2. 16. 9	6. 17. 4	9. 14. 1
Hill Cattle Subsidy	0. 1. 3	0. 0. 8	0. 1. 11	0. 2. 3	0. 3. 2	0. 5. 5

Table 4.

Total Costs to 1½, 2 and 2½ years of age, 1946-7.

	Up to 1½ years old.	Up to 2 years old.	Up to 2½ years old.
	£. s. d.	£. s. d.	£. s. d.
Net Cost of Food & Grazing	15. 0. 3	20. 0. 5	22. 0. 11
Direct Labour	8. 1. 11	10. 6. 1	10. 18. 0
Sundry Costs	0. 14. 11	1. 0. 2	1. 4. 6
Herd Depreciation	2. 11. 4	2. 11. 4	2. 11. 4
Costs of Deaths	0. 6. 5	0. 15. 7	0. 15. 7
Total Gross Costs	26. 14. 10	34. 13. 7	37. 10. 4
Credit from Breeding Herd and Calf Sales	3. 1. 0	3. 1. 0	3. 1. 0
Total Net Cost	23. 13. 10	31. 12. 7	34. 9. 4

Table 5.

Average Quantities of Foods Fed per Animal, 1946-7.

Type of Food.	Calves 0 - 6 months (Feeding of Breeding Herd and Suckling Calves).	Calves 6-12 months.	Cattle 1-2 years.	Cattle 2-2½ years.
Purchased Concentrates and Meals	10 lb.	12 lb.	17 lb.	"
Home Grown Concentrates	50 lb.	60 lb.	2 lb.	"
Oats on the Straw	5.4 cwt	7¼ cwt	5¾ cwt	2 cwt
Hay	9.4 "	12 "	6¾ "	10 "
Straw	15.3 "	1 "	9 "	9½ "
Roots	8.4 "	6 "	11 "	½ "

Table 6.

Average Net Cost per Calf at 6 months old, 1946-47.

Herds grouped according to Range of Costs per Calf.

	Group 1.	Group 2.	Group 3.	Group 4.
	Costs under £11.10s.	Costs over £11.10s. but under £14.	Costs over £14 but under £16.10.	Costs over £16.10s.
Number of Herds	7	6	8	8
Average Number of Calves per Herd	19	24	15	18
	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Net Food & Grazing Cost	7. 1. 0	9. 3. 6	8. 19. 1	10. 12. 11
Direct Labour	5. 10. 6	4. 0. 3	6. 9. 4	6. 15. 7
Net Deprec. of Herd	0. 5. 3	1. 17. 10	2. 14. 3	4. 10. 0
Sundry Costs	0. 5. 0	0. 6. 7	0. 6. 7	0. 5. 2
Calf Purchases	0. 4. 2	0. 2. 10	0. 1. 7	0. 3. 9
Total Gross Costs	13. 5. 11	15. 11. 0	18. 10. 10	22. 7. 5
Credits:				
Calf Sales	0. 3. 1	0. 19. 6	0. 12. 7	0. 4. 1
Milk	3. 12. 5	1. 16. 4	2. 15. 4	3. 0. 1
Total Credits	3. 15. 6	2. 15. 10	3. 7. 11	3. 4. 2
Total Net Cost per Calf	9. 10. 5	12. 15. 2	15. 2. 11	19. 3. 3

APPENDIX II.COSTS OF RAISING STORE CATTLE ON FARMS WHERE CALVES
ARE REARED BY THE BUCKET OR PAIL FEEDING METHODSAll Costs are per Animal.Table 7.Costs of Calves up to 6 months old, 1946-7.

	:	:
	: Autumn Born:	: Spring Born
	: (Winter	: (Summer
	: Period.)	: Period.)
Number of Calves Reared	: 147	: 144
<u>Foods:</u>	:	:
Whole Milk	: £. s. d	: £. s. d
Skim "	: 4.11. 5	: 2.15. 5
Meals & Purchased Concentrates	: 1. 1.11	: 1. 7. 9
Home Grown Concentrates	: 1. 9. 5	: 0.17. 9
Hay	: 0. 8. 1	: 0. 7. 5
Straw	: 1. 6. 9	: 0.10. 7
Oats on the Straw	: 0. 0. 2	: 0. 0. 1
Roots	: 0. 2. 7	: 0. 1. 3
Grazing	: 0. 1. 2	: 0. 0. 5
	: -	: 0. 5. 5
Total Foods & Grazing	: 9. 1. 6	: 6. 6. 1
Direct Labour	: 2. 6. 5	: 2. 1. 8
Vet and Medicines	: 0. 2. 6	: 0. 2.10
Add Value at Birth	: 2. 0. 0	: 2. 0. 0
Total Costs	: 13.10. 5	: 10.10. 7

Table 8.Costs of Calves 6-12 months old, 1946-7.

	:	:
	: Autumn Born:	: Spring Born
	: (Summer	: (Winter
	: Period.)	: Period.)
<u>Foods:</u>	:	:
Skim Milk	: £. s. d	: £. s. d
Meals & Purchased Concentrates	: 0. 9. 2	: 0. 1. 3
Home Grown	: 0. 8. 7	: 0.13. 3
Oats on the Straw	: 0. 2. 7	: 1. 3. 1
Hay	: 0. 0. 4	: 0. 7. 8
Straw	: 0. 3.11.	: 2. 3. 2
Roots	: -	: 0. 3. 9
Grazing	: 0. 0. 5	: 0. 8. 3
	: 0.17.11	: 0. 0. 3
Total Foods & Grazing	: 2. 2.11	: 5. 0. 8
Direct Labour	: 0.16. 2	: 2. 4. 0
Vet and Medicine	: 0. 0. 6	: 0. 0. 7
Transport	: -	: 0. 0. 1
Costs of Deaths	: 0. 2. 2	: 0. 1. 7
Total Costs	: 3. 1. 9	: 7. 6.11
Average Number of Calves reared	: 165	: 138

Table 9.

Costs of Store Cattle 12 to 18 months old,
1946-7.

		Autumn Born (Winter Period.)	Spring Born (Summer Period.)
	£. s. d.	£. s. d.	£. s. d.
<u>Foods:</u>			
Purchased Concentrates	0. 2. 5	-	-
Home Grown "	0.10. 0	-	-
Oats on the Straw	0. 8. 3	-	-
Hay	1.15. 6	-	-
Straw	0.10. 1	-	-
Roots	0. 6. 1	-	-
Grazing	0. 3. 7	1. 0. 4	
Total Foods & Grazing	3.15.11	1. 0. 4	
Direct Labour	2. 1. 7	0.11. 2	
Vet and Medicines	0. 0. 6	0. 0. 2	
Transport	0. 0. 4	0. 1. 2	
Sundry Costs	-	0. 0. 4	
Loss on Casualties	0.10. 0	0. 9. 7	
Total Costs	6. 8. 4	2. 2. 9	
Average Number of Cattle	163	157	

Table 10.

Costs of Cattle 1½ to 2½ years old, 1946-7.

		Raising from 1½ to 2 years old.	Raising from 2 to 2½ years old.	
		Autumn Born (Summer Period.)	Spring Born (Winter Period.)	Autumn Born. (Winter Period.)
	£. s. d.	£. s. d.	£. s. d.	£. s. d.
<u>Foods:</u>				
Purchased Concentrates	-	-	0. 1. 3	
Home-Grown "	-	0. 8.10	0. 0. 2	
Oats on the Straw	-	0.14.10	0. 8. 2	
Hay	-	1.14. 8	0.18. 7	
Straw	-	0.10. 3	0. 8. 0	
Roots	-	0. 5. 1	0. 1.10	
Grazing	1. 0. 4	0. 8. 2	1. 4. 2	
Total Foods & Grazing	1. 0. 4	4. 1.10	3. 2. 2	
Direct Labour	0.12. 0	2. 0.10	1. 8. 5	
Vet and Medicines	0. 0. 1	0. 0. 2	0. 0. 2	
Transport	0. 0. 2	0. 0. 8	0. 0. 7	
Sundry Costs	0. 0. 3	0. 0. 4	0. 0. 3	
Loss on Casualties	0. 5. 2	0. 6.10.	-	
Total Costs	1.18. 0	6.10. 8	4.11. 7	
Hill Cattle Subsidy	0.13. 7	0. 5. 0	0.13. 7	
Average Number of Cattle	86	135	64	

Table 11.

Total Costs to $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ years of Age,
1946-7.

	Up to $1\frac{1}{2}$ years old.		Up to 2 years old.		Up to $2\frac{1}{2}$ years old.
	Autumn	Spring	Autumn	Spring	Autumn
	Born.	Born.	Born.	Born.	Born
	(Spring)	(Autumn)	(Autumn)	(Spring)	(Spring.)
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Net Cost of Food and Grazing	15. 0. 4	12. 7. 1	16. 0. 8	16. 8. 11	19. 2. 10
Direct Labour	5. 4. 2	4. 16. 10	5. 16. 2	6. 17. 8	7. 4. 7
Loss on Casualties	0. 14. 8	0. 14. 0	0. 19. 10	1. 0. 10	0. 19. 10
Other Costs	0. 1. 4	0. 2. 4	0. 1. 10	0. 3. 6	0. 2. 10
Total	21. 0. 6	18. 0. 3	22. 18. 6	24. 10. 11	27. 10. 1
Add Value of Calf at Birth	2. 0. 0	2. 0. 0	2. 0. 0	2. 0. 0	2. 0. 0
Total All Costs	23. 0. 6	20. 0. 3	24. 18. 6	26. 10. 11	29. 10. 1

Table 12.

Average Quantities of Foods fed per Animal, 1946-7.

	Calves 0-6 months.		Calves 6-12 months.		Cattle 1 - 2 years.	Cattle 2 - $2\frac{1}{2}$ years.
	Autumn	Spring	Autumn	Spring	Born	Born
	Born.	Born.	Born.	Born	years.	years.
Whole Milk - galls.	46	66	-	-	-	-
Skin Milk - "	52	65	22	$2\frac{1}{2}$	-	-
Meal and Purchased Concentrates (lbs.)	140	84	45	79	28	9
Home Grown Concentrates (lbs.)	84	84	28	252	112	$1\frac{1}{2}$
Oats on the Straw (lbs.)	56	22	-	168	300	$1\frac{1}{2}$
Hay (lbs.)	600	336	140	1344	1120	612
Straw (lbs.)	10	3	-	224	612	500
Roots (lbs.)	90	34	-	612	400	112

Table 13.

2(c) Variation of Costs with Quantity of Milk fed per Calf.

Average Quantity of		Costs per Calf.	
Whole Milk fed per			
Calf (gallons)			
Range.	Average of	Food and	
for Group.	Herds.	Grazing.	Labour.
			Deaths.
			Total*.
		£. s. d.	£. s. d.
		Autumn Born Calves.	
Up to 35	24	8	5.18. 4
35 " 60	42	9	7.16. 9
Over 60	80	8	13.11. 1
All Herds	46	25	9. 1. 6
			2. 6. 5
			0. 2. 6
			11.10. 5
			Spring Born Calves.
Up to 45	24	8	4. 2. 7
46 " 70	66	8	6. 0. 5
Over 70	121	7	9. 8. 4
All Herds	66	23	6. 6. 1
			2. 1. 8
			0. 2. 10
			8.10. 7

* Excluding value at birth..

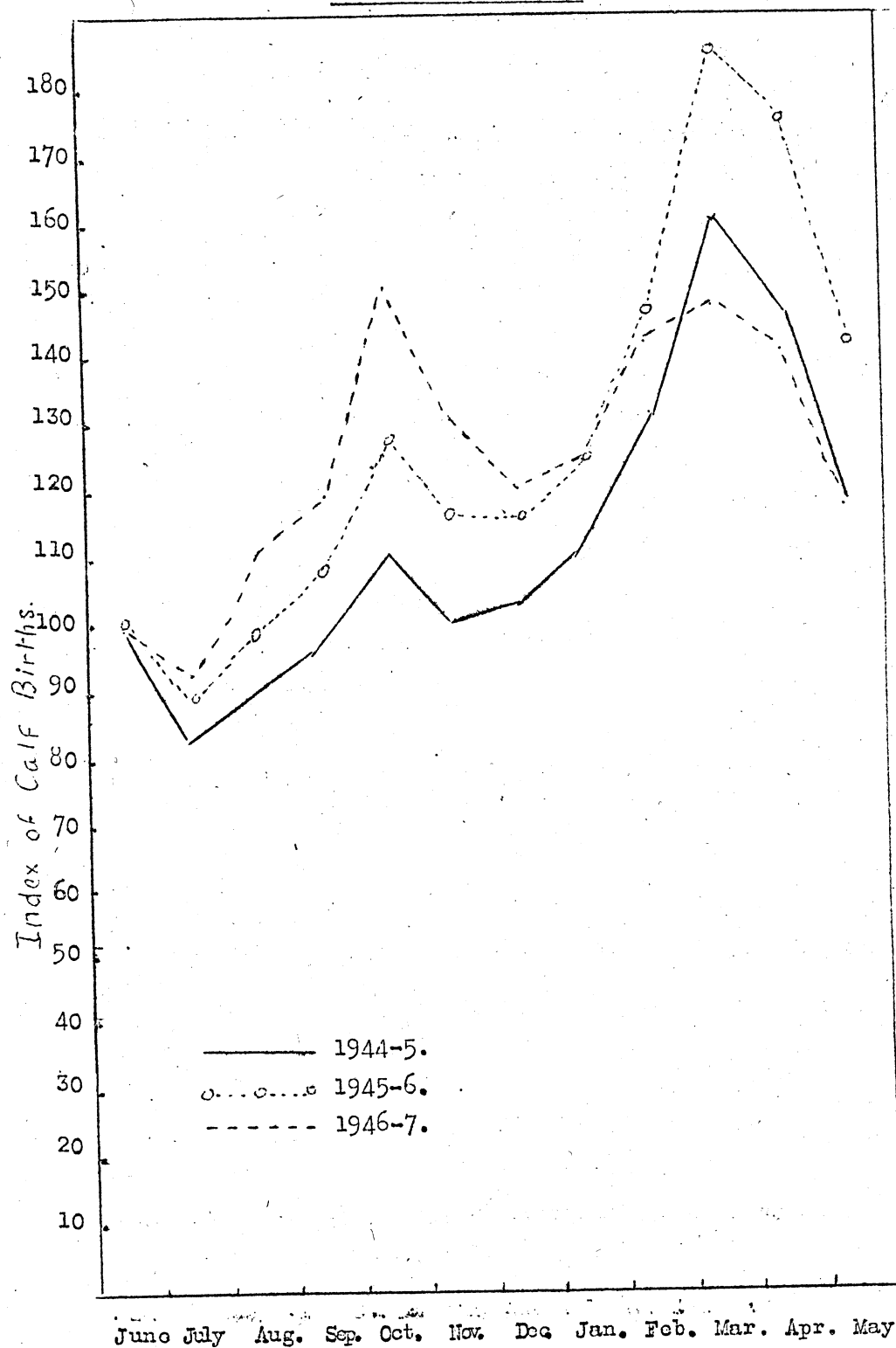
Table 14.

2(d) Analysis of Cost Groups.

Average Costs per Calf.	
Range of Cost	Number
per Calf.	of
	herds.
	Calves.
	Whole Milk.
	Foods & Grazing.
	Labour.
	Total*.
	£. s. d.
	Autumn Born Calves.
Up to £9.10s.	8
Over £9.10s. & less	8
than £12.10s.	9
Over £12.10s.	45
	Spring Born Calves.
Up to £7.10s.	8
Over £7.10s. & less	7
than £12.	8
Over £12.	44

* Excluding value at Birth.

Calf Birth - Wales. Changes in
Seasonal Distribution.
June numbers = 100.



NOTES ON COSTING PRINCIPLE.Hand Fed Foods.

Purchased Foods - charged at actual purchase price.

Home-Grown Foods - charged at costs of production determined for the 1946 harvested crops.

Milk to Pail-fed Calves. - (a) Calves being fed in Summer - milk charged at Summer cost of production on a similar group of farms.
(b) Calves fed in Winter - milk charged at Winter cost of production on a similar group of farms.

Labour involved in food preparation is taken into account in the cost of labour in feeding.

Grazing.

Costs were collected on each farm for all grazing land utilised by cattle. These were apportioned according to a grazing record for each portion of the grazing area, using the following scale for conversion into stock units:-

Cow Units.

Cows and Bulls	1
Other Cattle over 2 years	1
" " 1 - 2 "	$\frac{1}{2}$
Calves	$\frac{1}{4}$
Working Horses	1
Other "	$\frac{1}{2}$
Sheep over 1 year	1/7th
Lambs	1/14th

Labour.

Hired labour time has been charged at the actual rates paid, with an upward adjustment to cover a nominal period of overtime.

Family labour time has been charged at the regulation wage-rate in force at the period, plus a similar adjustment for overtime as in the case of hired labour.

Average Number of Cattle.

When total costs have been determined for each age group these are divided by the average number of cattle. This figure is the result of aggregating the total cattle in each month of a half-year period and dividing by six.

Aggregating Costs to Various Stages.

Costs presented at various stages of growth are the result of aggregating costs of raising in each half-year up to the respective stage. This would give the same result as if a group of cattle had been followed through from birth to those stages in their life, provided the same quantities of food, labour etc. at the same unitary costs, had been expended. If the level of unitary costs in the year of investigation can be regarded as an average for a longer period, then the aggregated costs can also be regarded as representative of this longer period.

