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Cheese — Marketing

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FARMHOUSE CHEESEMAKING

Some Financial Considerations
for the Farmer

by

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and

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Price Two Shillings and Sixpence

I, COURTENAY PARK,
NEWTON ABBOT,
DEVON.

CONTENTS

	<u>Page</u>
I. INTRODUCTION	1
II. THE MAIN CONSIDERATIONS FOR THE FARMER	5
III. ADDITIONAL RETURNS FROM CHEESEMAKING	8
IV. ADDITIONAL COSTS IN CHEESEMAKING	14
V. ADDITIONAL PROFITS IN CHEESEMAKING	17
VI. SUMMARY	20
APPENDIX I. Effect of Farmhouse Cheesemaking on the Dairy Industry.	22
APPENDIX II. Methods of Payment by Grade and Type of Cheese.	24
APPENDIX III Milk Marketing Board Statistics on Numbers of Farmhouse Cheesemakers, Milk Manufactured into Cheese, Varieties of Cheese, and Cheese Prices.	27

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I.

INTRODUCTION

Since the formation of the Milk Marketing Boards, the importance of the milk market to farmers has increased considerably, and milk sales in recent years have accounted for as much as 25-30% of the total agricultural output. It is not surprising therefore that the recent appearance of some disquieting features in the milk market has provoked widespread discussion amongst farmers. The most important of these features in England and Wales are:-

- (a) the production of supplies far in excess of liquid milk requirements, particularly during the winter months when pool prices are high and
- (b) a change in the system of guaranteed prices for milk - the higher prices are now guaranteed for a Standard Quantity only, quantities in excess of this being sold for manufacture at comparatively low prices.

These two developments have forced the Milk Marketing Board to appreciably reduce winter pool prices - the provisional pool prices announced for January, 1957 were subsequently reduced by 5d a gallon and substantial reductions were also made in other winter months. As a result, the average annual price paid to milk producers over the past year is likely to be somewhat lower than in the previous year.

Despite these significant reductions in winter prices, recent studies have shown that there may still be financial and other advantages in producing winter milk, particularly on farms where good use is made of silage, kale and other home-grown foods for replacing expensive purchased feedingstuffs. Even so, lower milk prices result in lower profits in dairying unless some adjustments are made. The adjustments may take the form of reducing unit costs, or possibly increasing output. The greatest scope for reducing unit costs lies in providing more cheap home-grown feed to replace costly purchased concentrates.

Output may be increased by keeping more dairy cows or by obtaining higher yields, or by introducing or expanding a subsidiary enterprise. It may also be possible to raise output (a) by producing quality milk thus qualifying for premiums, and (b) by processing milk on the farm thus providing a service generally performed in the factory. Processing milk into cheese on the farm may hold out distinct possibilities for

many dairy farmers. What are the major considerations they should bear in mind when contemplating cheesemaking and what are the advantages they are likely to enjoy? In this report the development of cheesemaking in this country is outlined and the main features of farmhouse processing of milk into cheese are discussed.

Until about one hundred years ago the liquid milk market was confined to town dairies and to farms in the immediate vicinity of towns. Milk produced in areas remote from the market was processed on the farm into cheese, butter and cream, products which were less perishable and far easier and cheaper to transport. The counties of Somerset and Cheshire, for example, acquired a particular distinction in cheesemaking, but changing conditions gave rise to liquid milk selling rather than farm processing. The main reasons for the change were:-

1. The increasing demand for liquid milk from a rapidly increasing population, the additional supplies being drawn from the more remote areas previously engaged in processing milk.
2. New roads and railways and the development of large glass-lined motor tankers, made it comparatively easy to transport large quantities of milk quite quickly from remote farms to the consuming areas.
3. The drift of labour from the rural areas into the towns created a shortage of man power and a change to milk selling became inevitable on many farms.
4. The attractions of a quick reasonable return on liquid milk sales outweighed "the potential wealth of the cheese loft", the disposal of which was often a tedious business.
5. Although the best quality farmhouse cheese could always command a good price, the lower grades of cheese faced intense competition from factory and imported cheese.

Nevertheless there was still a considerable number of farmhouse cheesemakers at the turn of the century and as late as the 1920's, but the advent of the Milk Marketing Board and the consequent appearance of a comparatively attractive market for liquid milk accelerated the decline in numbers still further. It was only the introduction

of financial support for cheesemakers within the milk marketing scheme in 1934/35 that saved the ancient craft from total extinction. A few farmers who had retained their equipment and enthusiasm were able to continue, but by 1939 there were only 1,121 farmhouse cheesemakers in England and Wales.

The outbreak of hostilities in 1939 was a further blow to the farmhouse cheesemakers, and by 1945 their numbers had fallen to 196. In 1940 the Ministry of Food took charge of all food supplies and various rules and regulations were imposed. For instance, farmhouse cheesemakers were only allowed to make cheese during the summer period April to September. High quality farmhouse cheese also tended to lose its identity under war-time conditions. Consequently, the number of farmhouse cheesemakers fell rapidly, but the need for maximum liquid milk supplies ensured a ready market for their milk. Since 1950 the number has shown a tendency to rise again, but the revival has been small to date - there are now approximately 140 cheesemakers compared with 120 in 1950.

Table 1 shows the relative importance of home-produced and imported supplies of cheese in 1938 and for several post-war years.

Table 1.

Cheese Supplies in the United Kingdom

	1938		1945		1950		1955	
	Thou- sand cwt.	%	Thou- sand cwt.	%	Thou- sand cwt.	%	Thou- sand cwt.	%
<u>Home-Produced</u>	860	22.7	440	10.3	1104	26.4	1261	32.8
<u>Imported</u>								
New Zealand	1639	43.3	1677	39.3	1606	38.4	1631	42.5
Canada	678	17.9	1171	27.5	517	12.4	121	3.1
Australia	237	6.3	71	1.7	324	7.7	396	10.3
Denmark	19	0.5	1	-	142	3.4	211	5.5
U.S.A.	-	-	895	21.0	154	3.7	-	-
Other	354	9.3	10	0.2	337	8.0	221	5.8
Total Imported	2927	77.3	3825	89.7	3080	73.6	2580	67.2
TOTAL	3787	100.0	4265	100.0	4184	100.0	3841	100.0

Source: Commonwealth Economic Committee. Annual Reviews of Production, Trade and Consumption of Dairy Produce.

Pre-war, some 77% of our cheese supplies were imported compared with 67% in 1955. New Zealand is by far the biggest exporter of cheese into the United Kingdom and in 1955 accounted for 43% of total supplies. Imports from Canada are lower but supplies from Australia and Denmark have increased over the period. An indication of the gallonage of milk manufactured into creamery and farmhouse cheese in England and Wales is given in Table 2.

Table 2

Milk Manufactured into Cheese in England and Wales, 1938/39 - 1955/56

	1938/39		1945/46		1950/51		1955/56	
	Mill- ion Gals.	%	Mill- ion Gals.	%	Mill- ion Gals.	%	Mill- ion Gals.	%
Creamery	67	76.1	41	93.2	80	95.2	152	95.0
Farmhouse	21	23.9	3	6.8	4	4.8	8	5.0
Total	88	100.0	44	100.0	84	100.0	160	100.0

Source: M.M.B. Statistics.

Pre-war some 20-25% of the milk used in cheesemaking was processed on farms, but in recent years the proportion has been about 5%, a further indication of the decline of farmhouse cheesemaking in the last 20 years.

II

THE MAIN CONSIDERATIONS FOR THE FARMER

In 1954, after 14 years of control, cheese rationing ended and all Government restrictions were removed. Once again it was possible to encourage cheesemaking on some of our farms and thus satisfy the demand which existed for high quality farmhouse cheese, because it appeared that the public preferred such cheese even at prices above those for the factory made or imported product. The setting up of a Farmhouse Cheesemakers Scheme in October 1954 encouraged some farmers to process milk into cheese because in addition to guaranteeing a reasonable return, the Board undertook the collection and marketing of the product. The Scheme also has certain advantages for the Board. For instance, milk processed on farms reduces the quantity which has to be diverted to the manufacturing market but at the same time represents a supply which can be used to satisfy the demands of the liquid market in times of emergency.

A dairy farmer joining the Farmhouse Cheesemakers Scheme enters into a contract with the Board. A grader visits the farm from time to time and grades the cheese into super, first or second quality. The graded cheese is transported to the warehouse, weighed and then sold through a cheese factor acting as a selling agent on a commission basis. The farmer is paid according to the weight of cheese, a formula being used to convert the weight into the equivalent gallonage of milk - for which the appropriate monthly prices are paid. (For 1956/57 the formula for Cheddar is 119 gallons to 112 lb. of cheese). In addition, the farmer gets a manufacturing allowance or perhaps more correctly, a grading premium since it depends on the grade of cheese. These returns are received in the form of an interim and final payment. The interim payment is usually received two months after the month of manufacture and includes the milk price plus a minimum allowance. (The allowance is paid one month later than a wholesale milk producer receives payment, but this would not be a serious disadvantage in a going concern because returns would be coming in at regular intervals even though they related to the manufacture of earlier months). The final payment, which is an adjustment to the grading premium, can only be made after the cheese has been sold and realisation prices are known. This usually involves a delay of 5 - 6 months after the month of manufacture. One further point worthy of mention at this stage is that the Board and buyers of milk off farms have agreed that milk-sellers can only start cheesemaking from 1st October each year, except in cases where the buyer of the producers' milk is prepared to relinquish the supply at an earlier date.

Before joining the Farmhouse Cheesemakers Scheme farmers should consider all the factors operating in their particular situation and likely

to influence the level of profit. Later in this report budgets are presented showing the probable effect of cheesemaking on output, costs and profit on the average farm. The main factors involved include:-

1. Type and quality of cheese.
2. Skilled labour necessary for cheesemaking.
3. Quantity and quality of milk.
4. Dairy equipment and extra buildings required.
5. Disposal of whey.

Type and Quality of Cheese A number of different varieties of cheese such as Lancashire, Wensleydale, Stilton and Caerphilly are produced in fairly well defined areas and others such as Cheddar and Cheshire are manufactured over much wider areas. In the South-West, Cheddar is the only farmhouse cheese which is made in any significant quantities.* The grade of cheese has an important influence on returns, and it is doubtful whether the production of second grade cheese holds out any prospect of additional profit for the average dairy farmer.

Labour The services of a trained cheesemaker are necessary if neither the farmer nor his family have any training or experience in cheesemaking. The work involved is heavy, exacting and has to be done each day of the week. If a trained man is employed then a sufficiently large quantity of milk must be processed to justify the high wage involved. One method is to have a cheesemaker and an assistant who actually makes the cheese in times of emergency, but also does other farm work as well. Such a unit should manage up to 600 gallons or more per day.

Quantity and Quality of Milk The farmer must consider the throughput of milk required each day to run the dairy at optimum capacity. With family labour a farmer might well consider starting on 80 - 100 gallons a day, but about 200 gallons is probably the minimum to start with when a cheesemaker is engaged. A farmer can use his own milk only, or if he has the capacity to process larger quantities, the Board may allow him to co-operate with neighbouring farms, and thus obtain additional quantities to augment his own supply. In this case the farmer pays the other farmer(s) whatever is agreed between them - usually the pool price and a bonus on the basis of the quality of the milk.

* The Farmhouse Cheesemakers Scheme is restricted to the following varieties of cheese:- Cheddar, Cheshire, Lancashire, Derbyshire and Leicestershire.

Quality of the milk is a very important factor because the higher the butterfat and solid-not fat content, the lower the gallonage of milk required to make 1 cwt. of cheese. Since the farmer gets paid on an average conversion rate, this really means that in cheesemaking he gets paid for his milk on a quality basis.

Equipment Required The farmer must bear in mind the capital cost of such dairy equipment as cheese vats, curd knives, curd mill and presses. In addition there may well be the cost of building or adapting existing buildings to make sufficient space and convenient layout in the dairy, press room and cheese stores. For a large cheesemaking enterprise storage costs can be a big item. Equipment such as piping, storage tanks, and pumping facilities may also be necessary for dealing with the whey.

Disposal of Whey Whey, a by-product of the cheesemaking process, may be regarded as a waste product which has to be disposed of in a satisfactory manner, or sold to other farmers for pig feeding, or fed to pigs on the farm. If fed to pigs then suitable and convenient buildings to house a sufficient number of pigs are necessary.

III

ADDITIONAL RETURNS FROM CHEESEMAKING

Cheesemaking can have both a direct and an indirect effect on the dairy output. The direct effect is seen in the returns from the sale of cheese compared with that from milk. This depends on (a) the gallonage of milk the farmer uses to produce 1 cwt. of cheese, i.e. the conversion rate, (b) the formula used by the Milk Marketing Board in arriving at the price which they pay the farmer for his cheese and (c) the grade of cheese produced. The indirect effect depends on the use made of the whey - a by-product of the cheesemaking process.

The Conversion Rate The quality of the milk largely determines the gallonage required to make a certain weight of cheese. If high quality milk is used then fewer gallons are required to make say 1 cwt. of cheese than if milk of lower quality is used. An indication of the effect of butterfat content on the gallonage of milk required to produce 1 cwt. of cheese is shown in Table 3 below:

Table 3

Yield of Cheese from Milk according to Butterfat Content

<u>Per Cent. Fat</u> <u>in Milk</u>	<u>lb. of Cheese</u> <u>Per Gallon of Milk</u>	<u>Gallons of Milk</u> <u>Per 112 lb. of Cheese</u>
3.00	0.83	135
3.25	0.89	126
3.50	0.95	118
3.75	1.01	111
4.00	1.06	106
4.25	1.12	100
4.50	1.17	96
5.00	1.29	87

Source: The Agricultural Notebook. Farmer & Stockbreeder.
London 1953

Since all farmhouse cheesemakers receive the same price for cheese of similar variety and grade, a farmer using fewer gallons to make 1 cwt. of cheese receives on average a higher price per gallon of milk used. For example, one farmer may use 115 gallons to make 1 cwt. of cheese, but another farmer with better quality milk may only use 110 gallons, but both get paid for 119 gallons. Indirectly, this is equivalent to payment for milk on a quality basis.

Although butterfat content is one indication of the quality of milk for cheesemaking, some farmers prefer to use the total solids figure, particularly when paying for milk purchased from neighbouring farms for processing into cheese. This may well be a more reliable basis since butterfat and solids-not-fat do not always move together. However, whatever basis is adopted as a guide, it is generally accepted that considerable variations do actually occur from farm to farm in the number of gallons required to make 1 cwt. of cheese. For the purposes of this report, quantities ranging from 105 to 125 gallons are considered, but these quantities are not necessarily linked to the butterfat contents outlined in Table 3. Indeed farmers must determine the conversion rate on their own farm and, in doing so, must not place too much reliance on the butterfat content of their milk.

Price Received by the Farmer Under the Farmhouse Cheesemakers Contract the sums payable per pound of cheese is determined annually. For instance in 1956/57 the Board undertakes to pay for 119 gallons of milk at the net regional price⁺ for the month of manufacture for every 1 cwt. of Cheddar cheese produced. For example, if it is assumed that the price for milk in a particular month is 2s. 6d. per gallon, the sum payable is:-

$$\frac{119 (2s. 6d. - \frac{1}{2}d.)}{112} \text{ pence per lb. of cheese.}$$

In addition to this payment the farmer receives a further allowance. For Grade I Cheddar this allowance per lb. of cheese is either 25 per cent. of the modified sale price* of Grade I Cheddar sold in the third month after the month of manufacture - or 4 $\frac{3}{4}$ d. per lb., whichever is greater - minus 1 1/14d per lb. (10s. 0d. per cwt.).

The modified sale price for Grade I Cheddar in 1955/56 was estimated at 29.78d per lb. In arriving at this figure no allowance has been made for seasonality of production - it is merely a simple average of twelve monthly quotations. Assuming an average price of 3s. 0d. per gallon of milk, then the average return, or the total entitlement per pound of cheese to the farmer is:-

$$\frac{119 (3s. 0d. - \frac{1}{2}d.)}{112} + (25\% \text{ of } 29.78d.) - 1.07d.$$

$$= 44.08d.$$

equivalent to 411s. 5d. per cwt.

⁺ The net regional price per gallon includes the appropriate pool price plus any premiums earned, less 1/2d modified transport charge.

^{*} The modified sale price means the actual price obtained by the Board less such part of the Board's marketing expenses in excess of 1 1/14d. per lb. (10s. 0d. per cwt.).

The figure of 44.08d per lb. of Grade I cheese is received in two parts - and interim and a final payment. The interim payment, received two months after the month of manufacture, includes the guaranteed minimum of $4\frac{3}{4}$ d. per lb. instead of the 25% of the modified sale price. The final payment to the farmer is made some five or six months after the month of manufacture, when the final realisation prices are known. It is the amount by which 25% of the modified sale price exceeds $4\frac{3}{4}$ d. - less 1.07d marketing expenses.

Assuming a total return to the farmer of £20. 11s. 0d. per cwt. of Grade I Cheddar cheese, the extra returns from cheesemaking are set out in Table 4 according to the gallonage of milk necessary to make 1 cwt. of cheese.

Table 4.

Additional Returns per Gallon from making
Farmhouse Cheddar Cheese
(Grade I Cheese)

Gallons of Milk Required to Make 1 cwt. of Cheese	Returns for Liquid Milk if Sold @ $34\frac{7}{8}$ d per gal. (36d-1d. transport)	Returns to the Farmer per cwt. of Grade I Cheddar Cheese	Additional Returns from Cheesemaking	Additional Return/Gallon of Milk Used
	£ s d	£ s d	£ s d	d.
125	18 3 3	20 11 5	2 8 2	4.6
120	17 8 9	20 11 5	3 2 8	6.3
119	17 5 10	20 11 5	3 5 7	6.6
115	16 14 3	20 11 5	3 17 2	8.1
110	15 19 8	20 11 5	4 11 9	10.0
105	15 5 2	20 11 5	5 6 3	12.1

The table shows that with a good conversion rate the extra returns in cheesemaking amount to as much as 1s. 0d. per gallon. In assessing additional returns from cheesemaking an individual producer has to determine as accurately as possible the gallonage required to make 1 cwt. of cheese in his particular circumstances.

Grade of Cheese The grade of cheese produced affects the farmers returns from the cheesemaking enterprise. Using the assumption previously stated, comparative prices for the three grades of Cheddar cheese are set out in Table 5 below. (Details of the calculations for Super and Grade II cheese are set out in Appendix II(A).

Table 5

Estimated Prices Received by Farmers for Cheddar Cheese, 1956/57
(using 1955/56 realisation prices)

Grade of Cheese	Farmer's Prices	
	Per lb.	Per cwt.
	d	s d
Super	45.46	424 3
Grade I	44.08	411 0
Grade II	38.80	362 2

The farmer receives approximately $1\frac{1}{2}$ d. per lb. more for Super than for Grade I cheese. The difference between Grade II and Grade I cheese is approximately $5\frac{1}{4}$ d. per lb.

The additional returns per gallon earned by producers of Grade I cheese have been set out in the last column of Table 4 using the average price of 411s. 0d. per cwt. Those earned by producers of Super and Grade II cheese, based on the average prices quoted in Table 5 have been calculated in a similar manner. The additional returns per gallon for the three grades of cheese are set out in Table 6.

Table 6

Effect of Grade of Cheese and the Gallonage Required to make 1 cwt. of Cheese on the Additional Returns per Gallon from Cheesemaking
(Cheddar Cheese 1956/57 using 1955/56 realisation prices)

Gallons of Milk Required for 1 cwt. of Cheese	Additional Returns per Gallon of Milk		
	Super Grade	Grade I	Grade II
	d.	d.	d.
125	5.9	4.6	- 0.1
120	7.6	6.3	1.3
119	7.9	6.6	1.7
115	9.4	8.1	2.9
110	11.4	10.0	4.6
105	13.6	12.1	6.5

The table shows there is little to be gained from making Grade II cheese unless the conversion rate is very favourable. With high quality milk and the production of Super Grade cheese, the extra return per gallon may amount to nearly 1s. 0d. per gallon, but it is believed that the bulk of farmhouse Cheddar is Grade I cheese. The costs of farmhouse cheesemaking have to be deducted from these additional returns in calculating the likely additional profit from the enterprise.

These figures are dependent on both milk and cheese prices. The farmer is however guaranteed a minimum return over and above the adjusted pool price. This minimum amounts to 4³/₄d. per lb. of cheese less 1.07d. deducted by the Board to cover part of the marketing expenses. If 119 gallons of milk are used to make 1 cwt., then for Grade I cheese this minimum guarantee, together with the effect of milk prices and transport deductions, amounts to 4.1d per gallon. The total additional return per gallon for Grade I at this conversion rate (Table 4) is 6.6d. It would appear therefore that the prices realised for cheese enabled the Board to make an additional payment of 2.5d. per gallon.

Changes in Cheese Prices If cheese prices fell appreciably it may well be that the additional returns over and above 4.1d. per gallon may disappear. In recent months there has been a tendency for cheese prices to fall. This trend is shown in Appendix III Table 4 which sets out the average prices for English Factory Cheddar on the London Provision Exchange. It is believed that the prices of the farmhouse product are also tending to fall. In the absence of detailed information on the extent of the price changes, the effect of 10%, 20% and 30% reductions in the realisation prices of Grade I farmhouse Cheddar used in this report are shown in Table 7.

Table 7

The Effect of Lower Cheese Realisation Prices on the Additional Returns per Gallon of Milk. (Grade I Cheddar in 1956/57 - using 1955/56 Realisation Prices.)

Gallons of Milk Required to Make 1 cwt. of Cheese	Cheese Realisation Prices				Minimum Guaranteed under 1956/57 Contract
	1955/56 Level	Fall in 1955/56 Prices			
		10%	20%	30%	
	Additional Returns per Gallon				
	d.	d.	d.	d.	d.
125	4.6	4.0	3.3	2.6	2.2
120	6.3	5.6	4.9	4.2	3.8
119	6.6	5.9	5.2	4.5	4.1
115	8.1	7.3	6.6	5.8	5.4
110	10.0	9.3	8.5	7.7	7.3
105	12.1	11.4	10.6	9.8	9.3

With a 30% fall in cheese realisation prices, producers using 125 gallons to make 1 cwt. of cheese suffer a fall equivalent to 2d. per gallon compared with 2.3d. per gallon in the case of those producers using 105 gallons. Obviously price reductions of this magnitude may make cheesemaking less attractive than liquid milk selling for many producers. It would also focus attention on the minimum guaranteed returns from cheesemaking. Using the formula for Grade I cheese on Page 9 and substituting the $4\frac{3}{4}$ d. for - 25% of 29.78d. - it is possible to calculate the minimum guaranteed return to the producer per cwt. of cheese. This amounts to £19. 6s. 5d. which gives an additional guaranteed minimum return over and above liquid milk selling of 2.2d. per gallon to 9.3d. per gallon according to the gallonage required to make 1 cwt. of cheese. These figures are set out in the last column of Table 7.

Whey Cheesemakers may obtain indirect advantages by selling the valuable by-product whey, or by feeding it to pigs. If it is assumed that two gallons of whey replace 1 lb. of pig fattening meal costing 36s. 0d. a cwt., then the replacement value of the whey is about $1\frac{1}{2}$ d. per gallon of whey. Since about 80% of the gallonage of milk used in making Cheddar cheese is available in the form of whey, the value is 1.2d. per gallon of milk used. Therefore if 200 gallons of milk are processed daily, about 160 gallons of whey are available for feeding. The pig ration may well include $1\frac{1}{2}$ gallons of whey per pig per day. Thus some 100 pigs could be carried at any one time throughout the year.

Some experienced farmers would claim that whey feeding should be restricted to strong store pigs in order to reduce the risk of feeding troubles. Furthermore, since it is difficult to balance the rations for high grade bacon production, it may be advisable to produce porker pigs. Under this system it is probable that 4 batches could be fattened during the year.

Whey Butter Farmers using milk of good quality may find it very profitable to separate the whey and manufacture the cream into whey butter. In order to do this it may be necessary to obtain a whey storage tank, pumping equipment, separator and butter making equipment.

It has been estimated that 25 lb. of whey butter can be made from 1,000 gallons of whey (1,250 gallons of milk). The farmer has to make his own marketing arrangements and may realise as much as 4s. 0d. per lb. This enterprise can make a further significant contribution to total returns.

IV

ADDITIONAL COSTS IN CHEESEMAKING

This section indicates the likely additional costs that a prospective cheesemaker may have to incur. The estimates given are a guide for average conditions and therefore must be adapted where necessary to meet individual circumstances.

The main items are:-

- (1) Labour charges
- (2) Cost of dairy requisites.
- (3) Depreciation on cheesemaking equipment.
- (4) Depreciation on additional buildings.
- (5) Fuel costs for heating.
- (6) Cost of milk purchased from neighbouring farms.

Labour The amount of labour necessary for cheesemaking will depend to a large extent on the facilities available, and in addition on the gallonage of milk manufactured daily. Without agitating gear, labour is required continuously for long periods each day and it is unlikely that farmers could manage on whatever surplus labour may be available. It would appear therefore that adequate equipment is essential if spare family or other labour is to be used. Tubular bandages can also effect some saving in labour but all these facilities are likely to result in additional costs. Furthermore labour must be suitably trained before they can undertake the skilled work of cheesemaking and it may be necessary for members of the family to spend a period of time at a Farm Institute where intensive courses in the subject are given. Normally however a skilled cheesemaker will be employed, involving a weekly wage of about £10, and earning from £12 - £14 quite frequently. Obviously to justify such wages a sufficient gallonage must be processed to keep the man fully occupied. This could well mean manufacturing up to 400 gallons a day, a quantity which a skilled man could manage single handed, but for additional gallonages, assistance would be needed at certain times of the day.

Dairy Requisites The day to day expenses for items such as starter, rennet, salt, cloths, bandages, sundry chemicals and detergents in the dairy must be considered. These costs are estimated at 0.4d per gallon for a 100 gallon dairy, decreasing slightly for dairies manufacturing larger

quantities of milk.

Cost of Equipment Estimates of the initial cost of equipment for different gallonages are set out in Table 8 and in the lower part of the table an annual charge covering depreciation (10%) and interest on capital (6%) has been calculated. The steel vats are likely to be the biggest item together with the installation of an automatic stirrer. It will also be seen that some pieces of equipment such as a cooling tank and a jacketed starter can, have been omitted for the smaller quantities.

Table 8
Estimated Cost of Cheesemaking Equipment
according to Quantity Manufactured

Quantity of Milk per Day (gallons)	100	200	400
	£	£	£
Tinned Steel Vats *	115	160	295
Automatic Stirrer	75	130	150
Curd Knives (pair)	17	17	17
Curd Mill (Electric)	60	60	90
Moulds	} 27	54	90
Followers			
Presses	35	35	70
Cooling Tank	-	25	25
Galvanised Wash Tank	10	10	10
Jacketed Starter Can	-	-	20
Sundry Equipment	15	15	20
Total	354	506	787
Depreciation and Interest on Capital @ 16%	57	81	126

* The cost of stainless steel vats is considerably higher.

Depreciation on Additional Buildings An estimate of the depreciation costs on additional buildings, if any, depends on the layout and convenience of existing premises. It is assumed here that the dairy needs to be extended, a press room made, and whey tanks and piping installed. In addition a separate cheese store would be needed for the larger dairies together with the probable installation of self-turning racks to facilitate the frequent turning of a large number of cheeses. The total costs and

annual charges of such extension and new building are estimated at:-

<u>Quantity of Milk per day</u>	<u>Total Cost</u>	<u>Annual Charge @ 10%</u>
	£	£
200 and below	500	50
400	750	75

Heating The cost of additional heating is likely to be quite substantial since it covers not only steam in the dairy, but also heating of the cheese store during the winter months. This cost obviously depends on existing facilities on the individual farm and is closely related to the type of fuel used. For the purposes of this study it is assumed that the existing facilities are adequate to provide the heating required for cheesemaking. The additional costs for cheesemaking, estimated at 60% of the average fuel costs in milk production for the smaller unit and 50% for the larger enterprise, are as follows:-

<u>Quantity of Milk per day</u>	<u>Additional Heating Costs per annum</u>
<u>gallons</u>	£
100	55
200	90
400	180

Cost of Purchased Milk A farmhouse cheesemaker buying milk from neighbouring farmers to augment his supply for manufacture has to take into account the cost of this milk. He may pay such farmers pool prices plus an additional amount per gallon depending for example on the quality of the milk or some other agreed basis.

ADDITIONAL PROFITS IN CHEESEMAKING

The additional profits which the milk producer can earn in farmhouse cheesemaking depend on the increases in the output of the dairy and on the additional costs incurred. In arriving at the additional profit figure various assumptions and estimates have been made in the previous sections. For instance, in Table 9 below it is assumed that (a) the cheese made is Cheddar (b) all cheese qualified for Grade I, (c) 119 gallons of milk are used to make 112 lb. of cheese and (d) payment is made according to the Farmhouse Cheesemakers Contract of 1956/57, but using 1955/56 realisation prices for cheese.

Table 9

Additional Returns, Costs and Profits
from Farmhouse Cheesemaking according to Size

Gallonage of Milk Manufactured Daily	TOTAL			PER GALLON		
	100	200	400	100	200	400
	£	£	£	d.	d.	d.
Additional Returns	1,004	2,008	4,016	6.60	6.60	6.60
<u>Additional Costs:</u>						
Labour	520	520	728	3.42	1.71	1.20
Dairy Requisites	61	116	225	0.40	0.38	0.37
Deprec'n. on Equipment & Buildings	107	131	201	0.70	0.43	0.33
Fuel	55	90	180	0.36	0.30	0.30
Total Additional Costs	743	857	1,334	4.88	2.82	2.20
Additional Profit	261	1,151	2,682	1.72	3.78	4.40
Feed Value of Whey	183	365	730	1.20	1.20	1.20
Additional Profit (including feed value of whey)	444	1,516	3,412	2.92	4.98	5.60

The additional profits range from £261 per annum for the

smaller enterprise to £2,682 for the 400 gallon dairy. It must be remembered that in the case of the 100 gallon dairy the wages of a full-time cheesemaker have been included. A farmer contemplating cheesemaking on this scale may find it possible to employ a member of his family or he may use some surplus labour which may be available. In such cases the farmer's son or daughter must decide whether the wage included is a satisfactory return for the labour involved. If the farmer incurs no additional wage payments then in arriving at the additional profits which are likely to be realised, no labour charges should be included.

By far the largest item of cost is that incurred for labour. This amounts to 3.42d. per gallon for the 100 gallon dairy but where larger quantities are manufactured this cost is considerably lower. Other cost items such as dairy requirements, fuel and depreciation amount to about a 1d per gallon for the 400 gallon dairy.

In addition the replacement value of whey as a pig food might well be 1½d. per gallon. Since the gallonage of whey left over is 80% of the quantity of milk used, then the value of the whey is about 1.2d. per gallon of milk. The additional profits are increased quite considerably if the value of the whey is included.

Some farmers find it profitable to separate the whey in order to make whey butter. This is dependent on the quality of the milk and indeed on the availability close at hand of a market for butter since the farmer himself has to market the product.

In Table 10 the additional profits from cheesemaking (including the value of whey) are set out according to the quality of the milk.

Table 10

Profits from Cheesemaking According to the
Quality of the Milk. (Grade I Cheddar)
(Profits include value of whey)

Gallons of Milk Required to Make 1 cwt. of Cheese	Quantity of Milk per Day (galls)		
	100	200	400
	£	£	£
	P r o f i t s p e r A n n u m		
125	139	907	2,194
120	398	1,424	3,229
119	444	1,516	3,412
115	671	1,972	4,324
110	960	2,550	5,479
105	1,280	3,188	6,757

The range in profits as shown in the above table for each of the different sized dairies emphasises the effect of the quality of the milk on the financial aspect of farmhouse cheesemaking.

Table 11

Effects of Falling Cheese Prices on Additional Profits
(Grade I Cheddar. Conversion rate of 119 gallons to 1 cwt. of cheese)

Cheese Realisation Prices	Quantity of Milk per Day (galls)		
	100	200	400
	Additional Profits per Annum		
	£	£	£
1955/56 level	444	1,516	3,412
10% reduction	338	1,304	2,988
20% "	232	1,092	2,564
30% "	126	880	2,140
Minimum Guarantee (assuming costs as in Table 9)	64	756	1,892

The minimum returns guaranteed to cheese producers are not likely to be of any significance unless cheese prices fall by more than 30%. In such a situation cheesemakers on a small scale are not likely to obtain profits considerably in excess of those they could enjoy by selling liquid milk. Cheesemakers on a larger scale may find cheesemaking attractive even with the substantial reductions which would have to take place before the minimum guaranteed return began to operate.

VI

SUMMARY

1. The number of farmhouse cheesemakers has declined steadily throughout this century. In 1939 the number in England and Wales was 1,121 and by 1950 it had dropped to 120.
2. Pre-war 88 million gallons and in 1955/56 160 million gallons of milk were manufactured into cheese in England and Wales. Some 24% and 5% respectively of this milk was processed on farms.
3. Since about 1950 interest in the domestic craft has revived and the setting up of the Farmhouse Cheesemakers Scheme in 1954, by removing some of the hazards, has made it far more attractive.
4. A consideration of some of the attractions of cheesemaking on the farm is appropriate because at the present time falling milk prices and rising costs tend to reduce profits in dairying. Cheesemaking can result in considerably higher returns for the milk producer.
5. A prospective cheesemaker has to consider (a) the type and quality of cheese he is likely to produce, (b) the skilled labour which he may have to employ, (c) the quantity and quality of milk available, (d) the dairy equipment and extra buildings which may be necessary and (e) the disposal of whey.
6. The farmer joining the Farmhouse Cheesemakers Scheme enters into a contract with the Board which undertakes the collection and marketing of the cheese.
7. The Milk Marketing Board uses a conversion factor of 119 gallons of milk for every cwt. of Cheddar cheese. The farmer is paid according to the weight of cheese made, receiving for every 1 cwt. of cheese the appropriate net regional price on 119 gallons of milk. In addition he gets a manufacturing allowance or rather a grading premium since it depends on the grade of cheese produced.
8. The farmer receives an interim and a final payment. The interim price, received two months after the month of manufacture comprises the net regional price for milk (after conversion) and a minimum

manufacturing allowance of $4\frac{3}{4}$ d. per lb. The final cheese price - usually received five or six months after the month of manufacture - is the balance due after the realisation prices of the cheese are known and the marketing expenses are deducted.

9. Under the terms of the 1956/57 Contract, and assuming 1955/56 realisation prices for cheese, the producer of Grade I Cheddar cheese earned an extra return of 6.6d. per gallon of milk used, assuming he used 119 gallons of milk to make 1 cwt. of cheese.
10. The conversion rate depends on the quality of milk used. With milk of very good quality it may be possible to produce 1 cwt. of cheese from only 110 or even 105 gallons.
11. The grade of cheese produced affects the cheesemakers returns. In 1956/57 (based on 1955/56 realization prices) the farmers' returns for Super, Grade I and Grade II Cheddar were 424s. 3d., 411s. 0d. and 362s. 2d. per cwt. respectively.
12. The main costs of cheesemaking are those incurred on (a) labour (b) dairy requisites (c) depreciation on equipment and additional buildings (d) additional fuel costs (e) milk from neighbouring farms, if any. Labour is the biggest overhead charge, especially if a professional cheesemaker is employed. Costs of cheesemaking may vary from 2d. to $4\frac{3}{4}$ d. a gallon.
13. The additional profits from cheesemaking for Grade I Cheddar cheese, assuming 119 gallons of milk for 1 cwt. of cheese, vary from about $1\frac{3}{4}$ d. to $4\frac{1}{2}$ d. a gallon. In addition the feeding value of whey may be as much as 1.2d. per gallon of milk used. Thus, with a good conversion rate, and the production of Super or Grade I cheese, farmhouse cheesemaking can be a very profitable enterprise.
14. If the 1955/56 realisation prices for cheese are maintained, farmhouse cheesemaking is in the interests of the dairy industry.
15. Cheese prices and of course the future of farmhouse cheesemaking depend not only on cheese supplies but also on the quality of farmhouse compared with the factory made and imported cheese. It also depends on the willingness of the consumer to pay a higher price for a better quality farmhouse product.

APPENDIX I.

Effect of Farmhouse Cheesemaking on the Dairy Industry

Many milk producers will be wondering whether an extension of cheesemaking under the Farmhouse Cheesemakers' Scheme is in the interests of the dairy industry as a whole. This depends on a number of factors, the most important being (a) the price received by the Board for liquid milk diverted for manufacture (b) the price realised by the Board for farmhouse cheese and (c) the Farmhouse Cheesemaker's Contract. The effect of the factors are set out below and in preparing this data the following assumptions are made:-

- (a) an average annual wholesale (producers) price for milk of 3s. 0d. per gallon.
- (b) an average price of 1s. 6d. per gallon received by the Board for milk manufactured into factory cheese.
- (c) that 119 gallons of milk are required to make 1 cwt. of cheese.
- (d) an average realisation price to the Board of 29.78d per lb. for farmhouse cheese (equivalent to 28d. per gallon)
- (e) an average return to the farmhouse cheesemaker of 44.08d. per lb. of cheese (equivalent to 41.50d. per gallon).

With the prices quoted above the "loss" incurred by the Board amounted to 1s. 1½d. per gallon in the case of farmhouse cheese compared with a "loss" of nearly 1s. 5d. per gallon on milk diverted for manufacture by the Board. This comparison is set out below.

"Loss" incurred by the M.M.B.
(per gallon)

	<u>Milk diverted by</u> <u>M.M.B. to Manufacture</u>	<u>Milk used for</u> <u>farmhouse</u> <u>cheesemaking</u>
	d.	d.
Price paid to farmer	34 7/8*	41½
Price received by Board	<u>18</u>	<u>28</u>
"Loss" incurred by M.M.B.	16 7/8	13½

* 3s. 0d. less 1½d. transport charge.

Table 1 shows that even with a reduction of 10% in cheese prices it is still advantageous to the Board to encourage farmhouse cheesemaking, but any further reductions are likely to involve greater "losses" than the 16 $\frac{7}{8}$ d. per gallon already mentioned. There are signs that cheese prices may fall in the future, and the Board may have to incur appreciably greater "losses", particularly if there is a considerable increase in supplies of farmhouse cheese. However, the situation is a most complex one for it is probable that the falling cheese prices may lead to lower prices for milk

Table 1

Effect of Falling Farmhouse Cheese Prices on Relative
"Losses" Incurred by the Board
(per gallon)

Cheese Realisation Prices	Farmhouse Cheesemaking			"Loss" on Milk Diverted by the Board to Manufacture
	Boards' Realisation	Farmers' Returns	Boards' "Loss"	
	d.	d.	d.	d.
1955/56 Prices	28.0	41.5	13.5) 16 $\frac{7}{8}$
10% fall	25.2	40.8	15.6	
20% fall	22.4	40.1	17.7	
30% fall	19.6	39.4	19.8	

diverted to the manufacturing market.

If farmhouse cheesemaking declined, it is likely that the milk would not be transferred to the "high category" market but to the factory cheese market. Therefore, it may be argued that it is more appropriate to compare the Board's return per gallon from farmhouse cheesemaking with the return on milk sold to factory cheesemakers, and not with average manufacturing realisation prices. If cheese prices fall, the reduction in factory cheese prices is likely to be similar to that in the farmhouse cheese prices. It would seem therefore that farmhouse cheesemaking is likely to remain in the interests of the dairy industry. But the Board is in a position to make amendments to the Farmhouse Cheesemakers Contract, if it is necessary to take action in the interests of other dairy producers.

APPENDIX II. (A)

METHOD OF CALCULATING PRICES FOR SUPER AND GRADE II CHEESE

In Section III the formula for calculating the price of Grade I cheese was explained in detail. The methods for Super and Grade II cheese are somewhat different and are explained in these notes.

Table 1

Estimated Returns for Cheddar Cheese under 1956/57 Contract
(using 1955/56 realisation prices)

	Grade of Cheese		
	Super	Grade I	Grade II
Estimated Modified Sale Price* (per lb. of cheese)	31.14d.	29.78d.	24.48d.
<u>Farmers' Return</u>			
per lb.	45.46d.	44.08d.	38.80d.
per cwt.	424s. 3d.	411s. 0d.	362s. 2d.

* As defined in 1956/57 Contract.

Method of Payment for Super Grade Cheese

The sum per lb. of Super Grade Cheddar shall be:-

..... $\frac{119}{112}$ of the net regional price* for the relevant month

plus either 25 per cent of the modified sale price* of Grade I third month cheese of Cheddar type or $4\frac{3}{4}$ d. (whichever is the greater) plus the amount by which the modified sale price of Super Grade third month cheese of Cheddar type exceeds the modified sale price of Grade I third month cheese of Cheddar type, minus $1\frac{1}{14}$ d. (10s. 0d. per cwt.).

The calculation for Super Grade cheese, using the assumptions for Grade I in Section III of this report and the modified sale prices above,

* See footnotes on Page 9.

is as follows:-

$$\begin{aligned}\text{per lb. of cheese} &= \frac{119(3/0d - \frac{1}{2}d)}{112} + (25\% \text{ of } 29.78d) + (31.14d - 29.78d) - (1.07d.) \\ &= 37.72 + 7.45 + 1.36 - 1.07 \text{ pence} \\ &= 45.46 \text{ pence} \\ &= 424s. 3d. \text{ per cwt.}\end{aligned}$$

Method of Payment for Grade II Cheese

The sum per lb. of Grade II cheese shall be:-

$$\dots\dots\dots \frac{119}{112} \text{ of the net regional price for the relevant month}$$

plus 25 per cent. of the modified sale price of Grade II third month cheese of Cheddar type minus the Grade II Cheddar marketing costs subject, however, to a maximum of 1 1/4d. (10s. 0d. per cwt.) and minus 75 per cent. of the amount by which the modified sale price of Grade I third month cheese of Cheddar type exceeds the modified sale price of Grade II third month cheese of Cheddar type.

The calculation for Grade II cheese, using the assumptions for Grade I in Section III of this report and the modified sale prices quoted in Table I of this Appendix, is as follows:-

$$\begin{aligned}\text{Grade II per lb.} &= \frac{119(3/0d - \frac{1}{2}d)}{112} + (25\% \text{ of } 24.48) - (1.07) - (75\% \text{ of } 5.30) \\ &= 37.72 + 6.12 - 1.07 - 3.97 \text{ pence} \\ &= 38.80 \text{ pence} \\ &= 362s. 2d. \text{ per cwt.}\end{aligned}$$

APPENDIX II (B)

The following are the main differences in the method of calculating the payment due to makers of Cheshire, Lancashire, Derbyshire and Leicestershire cheese (under the 1956/57 contract) from that used in the case of Cheddar makers:-

- (a) The conversion rate is 115 rather than 119 gallons of milk per cwt. of cheese.
- (b) The additional premium based on quality is $22\frac{1}{2}\%$ of the modified sale price rather than 25%.
- (c) Realisation prices of cheese are those in the first month after the month of manufacture instead of the third month.
- (d) $77\frac{1}{2}\%$ is substituted for 75% in the formula for Grade II cheese.

The formula in the case of Grade I Cheshire is as follows:-

$$\frac{115 \text{ (Net regional price)}}{112} + (22\frac{1}{2}\% \text{ of Modified sale price}) - 1.07d.$$

APPENDIX III

Table 1

Numbers of Registered Milk Producers and
Farmhouse Cheesemakers in England
and Wales 1934-55

Year	Number of * Reg. Milk Producers (March each year)	Number of Farmhouse Cheesemakers
1934	100,450	1,320
1935	127,030	820
1936	131,630	1,030
1937	135,080	1,140
1938	130,360	1,300
1939	133,790	1,120
1940	138,490	760
1941	146,520	590
1942	152,500	380
1943	158,000	250
1944	159,440	220
1945	158,010	200
1946	156,410	170
1947	158,280	150
1948	160,040	140
1949	161,430	130
1950	161,940	130
1951	160,980	120
1952	156,010	120
1953	151,820	130
1954	146,630	130
1955	142,790	140
1956		140

* Note:- During the war and immediate post-war years the number of registered milk producers was considerably inflated. Part of the fall in numbers between 1950 and 1954 was due to a revision of the Board's register.

Source: Milk Marketing Board Statistics.

Table 2

Milk Manufactured into Cheese in
England and Wales. 1933/34-1955/56
(Million Gallons)

Year	Creamery	Farmhouse	Total	Cheese as percent of Total Manufacture
1933/34	62	19	81	38.0
1934/35	93	14	107	33.9
1935/36	89	18	107	29.7
1936/37	59	20	79	25.6
1937/38	53	24	77	24.8
1938/39	67	21	88	25.0
1939/40	56	16	72	25.5
1940/41	47	9	56	47.1
1941/42	27	6	33	30.6
1942/43	36	4	40	31.3
1943/44	30	3	33	25.0
1944/45	37	3	40	30.1
1945/46	41	3	44	34.6
1946/47	31	2	33	33.7
1947/48	39	3	42	30.7
1948/49	60	3	63	42.9
1949/50	102	4	106	44.4
1950/51	80	4	84	56.4
1951/52	89	5	94	56.3
1952/53	137	6	143	55.0
1953/54	158	7	165	49.3
1954/55	107	7	114	38.3
1955/56	152	8	160	40.5

Source:- Milk Marketing Board Statistics.

Table 3

Varieties of Cheese Manufactured in England and Wales

(Million gallons - October-September years)

Variety of Cheese	Cheddar	Cheshire	Caerphilly	Lancashire	Stilton	Soft Curd & Cream	Wensley Dale	Others	Total
<u>Creamery</u>									
1938/39	20	29	3	8	4	1	1	1	67
1951/52	37	44	-	4	2	-	2	-	89
1952/53	54	68	-	8	3	-	3	1	137
1953/54	61	77	1	10	3	1	4	1	158
1954/55	32	54	5	7	4	1	4	-	107
1955/56*	58	67	6	10	4	1	4	2	152
<u>Farmhouse</u>									
1938/39	6	11	-	3	-	-	-	1	21
1951/52	3	2	-	-	-	-	-	-	5
1952/53	3	3	-	-	-	-	-	-	6
1953/54	4	3	-	-	-	-	-	-	7
1954/55	3	3	1	-	-	-	-	-	7
1955/56*	4	3	1	-	-	-	-	-	8

*Provisional

Source:- M.M.B. Statistics.

Table 4

Average Prices of English Factory Cheddar Cheese
on the London Provision Exchange
(per cwt.)

Month	1954		1955		1956		1957	
	s	d	s	d	s	d	s	d
January	199	5	228	0	283	0	248	0 *
February	213	5	225	4	279	3	240	0 *
March	217	3	227	6	275	0	225	0 *
April	217	3	226	0	272	6	195	0 *
May	180	0	227	0	261	0	190	0 *
June	180	0	226	0	267	6	190	0 *
July	180	0	223	0	283	9	-	-
August	180	0	217	6	282	6 *	-	-
September	182	4	223	5	284	0 *	-	-
October	197	9	246	3	282	0 *	-	-
November	202	8	273	9	275	0 *	-	-
December	225	0	276	0	257	0 *	-	-

* Average of quotation range.

Source: Commonwealth Economic Committee.
Annual Reviews and Monthly
Intelligence Bulletins for Dairy
Produce.

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