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RESEARCH IN MILK MARKETING IN ENGLAND AS ILLUSTRATED BY A SURVEY IN DERBYSHIRE

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DURING the post-war depression in England, dairy farming alone—if specialist cultivation of the nature of fruit growing, market gardening, and poultry farming be excluded—has extended, and the results of costings at the various research stations indicate that it has been more profitable than other departments of the farming industry. From 1867 to 1925 the number of cows in milk in England and Wales increased from 68 to 105 per 1,000 acres of cultivated land, an increase of 37, while other cattle increased from 104 to 134 per 1,000 acres of cultivated land, an increase of 30. During the same period, however, the number of cows in milk per 1,000 of population declined from 78 to 70, a loss of 8, while the numbers of other cattle declined per 1,000 of population from 119 to 89, a loss of 30. That the number of cows in milk in relation to population has fallen does not necessarily indicate a lower consumption of milk per head, but, more probably, a decline in the home manufacture of cheese, butter, and other dairy products due to the competition of imports from abroad. These figures indicate, however, that there is still room for expansion in the dairy industry.

Research in milk marketing involves the discovery of the whole materials of research. We know the number of cows in milk for any given area, but we do not know their yield; in fact, the estimates of milk yield vary from 400 to 700 gallons per cow per year. Nor do we know the consumption of liquid milk per head of population, and we have no more than vague ideas, for the whole and for different parts of the country, of the proportions of the milk yield sold liquid, manufactured on the farm, fed to stock, and consumed in farm households. And, of the milk sold liquid, we have, again, very little reliable information as to the relative quantities entering the liquid market as compared with the quantities used in manufacture.

Research in milk marketing, therefore, cannot be based upon already existing statistical knowledge, save that, in 1908 and in 1925, extensive, though incomplete, returns were received by the

Ministry of Agriculture as to the milk yield, and the proportion sold liquid. From the 1925 returns the total milk yield was placed at 1,120 million gallons per year, and the yield per cow at 416 gallons per year. As between 1908 and 1925, an increase in production of 150 million gallons was recorded, while the yield per cow remained the same. From these enquiries, it appeared that a little less than 10 per cent of the total production was fed to calves; also that 75 per cent of the production was sold liquid, excluding that fed to calves.¹

Research in milk marketing necessitates not only a knowledge of production, of which fairly reliable figures for the country as a whole have just been given, but of the channels of sale and the proportions sold or disposed of by each channel. Precise information as to marketing methods is almost completely lacking. We know, of course, that London is supplied with milk by rail from considerable distances to south, west, and northwest, and that the large Midland towns are largely supplied from their own immediate neighborhood. However, we have no reliable figures to show the proportions sold direct by the farmer to the consumer, sold by the farmer to the retailer, sold to the wholesaler or manufacturer, made up into cheese, butter, and cream on the farm, or, for any given area, fed to stock and consumed in farm households. Equally lacking are details of the transactions between wholesalers, retailers, and manufacturers. Prices and margins are but vaguely known. As the object of research into milk marketing is to be able to present to the farmer sound suggestions whereby marketing might be rendered more efficient, it is obviously necessary, first of all, for the research worker to know precisely how milk is marketed under existing circumstances, and at what prices and margins. With the idea of acquiring precise information of this nature, the Agricultural Economics Research Institute of Oxford, assisted by a grant from the Empire Marketing Board, undertook to discover the mechanism of milk selling in Derbyshire. I should like to take this opportunity of acknowledging the support and assistance of the director and my colleagues at the Agricultural Economics Research Institute of Oxford, of the principal, the advisory economist, and the latter's staff at the Midland Agricultural Col-

¹ The above figures have been taken from the "Agricultural Output of England and Wales," 1925, published by H. M. Stationery Office.

lege, of the county organizer and his staff of Derbyshire, of all county authorities, private companies, milk retailers, cooperative societies and, certainly not least, of the farmers of Derbyshire who, almost without exception, did their utmost to answer our questions, put I am afraid, at considerable length.

We decided we must assume that nothing was known about milk marketing in Derbyshire, and that everything must be found out. The only means of finding out was to visit all producers of milk within the county, and all wholesalers and manufacturers, as well as those retailers working on a considerable scale. At the same time we decided upon a detailed investigation of the milk distributive service in the town of Derby. The farms were visited by two assistants of the Midland Agricultural College. The distributive service of Derby, and the factories, depots, railway stations, private firms, and cooperative societies were investigated and visited by members of the Institute staff. Looking back, it is clear that we undertook our survey with too small a staff. It would have been better to have employed a much larger field-staff for a shorter time. Theoretically, a survey of marketing, that is, of movement, should relate to a given day for the whole district covered, if an absolutely true picture of conditions is to be gained. In this respect a marketing survey differs from a production survey, in which conditions are static and, to some extent, attend the convenience of the investigator.

Whereas a production survey can, with reliable results, be based on a few hundreds of farms following the same general system of husbandry, a marketing survey must cover a much wider field and a much greater number of farms to enable reliable generalisations to be made. Marketing processes cannot be localised, and the survey must be carried beyond the farm to the totally distinct occupations of wholesale distribution and manufacture. Marketing research, in fact, concerns the relations of the farmer with the remainder of the business community. We believe, as a result of our experience, that some thousands of farms must be investigated in any given district before correct deductions can be drawn as to the relations of the producer with the various channels of disposal open to him. The diversity of marketing channels for each commodity, in England at least, renders necessary a wide field of investigation. Only by so covering a wide field, wherein the relative importance of the various channels of marketing is made

evident, does it become possible to assess the relative advantages and disadvantages to the farmer of each channel.

Before discussing the results of our milk survey of Derbyshire, perhaps a few axiomatic remarks will be permitted on milk as a marketed commodity. Milk is in constant and fairly steady production, is highly perishable, and is continuously essential to human existence. As it is liquid and readily subject to contamination, the technical work of distribution requires careful organisation, and is necessarily expensive. While production of milk varies seasonally, consumption remains practically constant, so that, in the purely liquid trade, a surplus occurs seasonally which must be manufactured into some form of non-perishable produce. The liquid milk market is the single important monopoly market of the English farmer. With respect to all other major commodities, he must conform to the price level fixed by imports. Milk in non-perishable form—that is in the form of condensed milk, cheese and butter—is, however, imported, and so, for that portion of our milk production which exceeds the requirements of liquid consumption the English farmer must, as in the case of other commodities, conform to the price-level fixed by these imports. Not the least of the complications arising for those who attempt to rationalise milk marketing is the adjustment of price between liquid milk, of which the market is a home monopoly, and manufactured milk, which must face world competition.

Before arriving at conclusions as to the efficiency of marketing organisation in Derbyshire, it was necessary to discover the production per cow in milk, the number of cows in milk, and the excess of summer over winter production. The present survey covers those farms producing milk for sale, either liquid or domestically manufactured. Farms producing milk for home consumption only were not included. In the industrial districts of Derbyshire where many of the smallholders were also miners and quarrymen, it was inevitable that certain milk producers should be overlooked.

Information as to total acreage was collected from 3,498 farms. The average acreage was 83. For 2,851 farms the average arable acreage was 9.3. There were, therefore, roughly 16 cows in milk per 100 acres on the farms surveyed, and 14 cows per farm, with a daily June output of about 26 gallons. In order to present the facts found by the survey in detail, the county was divided into six districts and each district was again subdivided into three or

four subdistricts. Totals of production and percentage disposals according to the various channels of marketing have been worked out for each district and subdistrict, as well as for the county as a whole.

District 1 comprises the higher parts of the northwest of the county. Subdistrict 1 includes the industrial towns of Glossop and New Mills and subdistrict 2 includes the residential town of Buxton. These towns are supplied with milk from their immediate neighbourhood. Owing to the unproductive character of the land, no great quantity remains for export. Subdistrict 3 consists entirely of moorland and high-lying pastures. In the northern part of this subdistrict the land rises to above 2,000 feet. As there are no towns, although production is low, the bulk of the milk produced is exported, chiefly to Manchester. Subdistrict 4 consists of the upper Derwent Valley. There is a considerable production of milk here, but, owing to the bad roads, a great deal of it is made into butter.

District 2 lies at about 600 to 1,000 feet. Subdistrict 1, lying at above 1,000 feet for the most part and very sparsely inhabited is a source of milk for the Manchester market, and for milk manufacturers and exporters further south. There are two small cheese-making factories in this subdistrict. Subdistrict 2 consists of the lower part of the Derwent Valley. Milk in large quantities is exported to London and Sheffield. Local consumption is small. Very little milk is produced in subdistrict 3, the bulk of what is produced going to Sheffield.

District 3 is industrial. Farms are small. Local producer-retailing is the chief outlet for milk. From subdistrict 1 a certain quantity of milk is sent to Sheffield. Over the remaining part of this district, local requirements absorb almost the whole production. There is one large town, (Chesterfield), with a population of 61,236. The remainder of the very considerable population of this district is found in the numerous small industrial towns.

District 4 slopes from the 800 foot level in the north to below 400 feet in the Trent Valley at the south. This district is entirely agricultural, and in it is produced more than one-half of the milk of the county. Considering the county as a whole, the farms here are large. In subdistrict 1 the bulk of the milk is sold to manufacturers, in subdistrict 2, the bulk is railed to London, and in subdistrict 3 the bulk is sold to wholesale exporters. It is in this

district that the capitalist distributive services are chiefly represented.

District 5, similar to district 3, is industrialised. There are no large towns, but a numerous population live in straggling mining and manufacturing towns. In this district, milk production is roughly equal to consumption, but the industrial cooperative societies, instead of the producer, market most of the milk.

District 6 is of mixed character. There are small industrial areas in the north and in the south, separated by the rich grazing land of the Trent Valley. The town of Derby lies in this district, and is largely supplied with milk from the Trent pastures within the district. Producer-retailing is of minor importance. There is a large surplus of production over internal requirements. This surplus goes chiefly to London, either through wholesale depots or by rail direct. You will see, therefore, that Derbyshire is diversified as to soil, topography, systems of farming, and density of population.

Systems of milk marketing are dependent not only on the climate and geography of the district but on the position of large consuming markets in relation to the district, and the good or bad access to these markets. Derbyshire is a midland and inland county, lying, for the most part, above 600 feet. In the northwest of the county the level is from 1,000 to 2,000 feet. Eighty-two per cent of the county is under grass or rough-grazings. Dairying is the chief agricultural interest, Derby being exceeded only by Cheshire, Flint and Lancashire in the density of milking stock.

The eastern half of the county is industrialised and densely populated. The total population of the county was, in 1921, 714,539. There are two large towns, Derby and Chesterfield with populations of 132,400 and 61,236, respectively. The remainder of the population is, for the most part, located in small industrial and mining towns. The agricultural population is about 80,000—a very small proportion of the total population.

Certain large towns, such as Sheffield, Manchester, Nottingham, Birmingham, and so forth, lie close to the Derbyshire county boundaries and, especially in the case of Sheffield and Manchester and the districts round them, exert an influence upon the systems of farming within Derbyshire. It is the liquid milk requirements of Sheffield and Manchester which have led to the practice of dairy farming upon high-lying land in Derbyshire which, in the parts of

the county not so accessible to large consuming populations, would have been devoted to store sheep and cattle raising. London is, however, by far the largest market for exported milk.

According to the agricultural statistics collected on June 4, 1928, the number of cows in milk in Derbyshire was 63,137, and the number of cattle under one year, 22,860. This relation between cows in milk and rearing calves is one which indicates a good market for liquid milk. For example, in Devonshire in 1928, with 87,954 cows in milk, there were 68,358 cattle under one year. Less calf feeding was found in Derbyshire than in Devonshire in proportion to the number of cows in milk because of the larger liquid demand in Derbyshire from neighboring towns and from London. In Devonshire there is only a small internal urban population, and the county is not situated in the neighbourhood of large towns.

MARKETING PROCEDURE

It might have been anticipated, in a county so densely populated industrially, not in the form of large towns but of numerous small towns in direct access to the farmer, that retailing by the producer direct to the consumer would be an important or even the prevailing channel of marketing. The percentages of the total production disposed of through various channels are given in table 1 for each of three districts and for the county as a whole.

Table 1. Percentage of Milk Disposed of in Various Ways in Different Districts in Derbyshire, England

Method of disposal	Per cent of total production			
	District 1	District 2	District 3	County average
Sold at wholesale.....	56.5	24.1	90.3	74.8
Retailed by producer.....	15.7	65.9	4.2	14.2
Manufactured domestically.....	15.9	2.9	1.1	2.4
Fed to calves.....	11.9	7.1	4.4	8.6

The figures of the county indicate that, even where milk production takes place in the midst of a large consuming population, the functions of production and distribution tend to be sharply differentiated and to be performed by separate agents. The predominance of the liquid market is shown by the fact that only 2.4 per cent of the total milk output was manufactured on the farm.

As a rule, domestic manufacture was a means of utilising the surplus over liquid sales, especially in the industrial districts where producer-retailing was an important means of marketing. Domestic manufacture was also found as the chief utilisation of milk in those districts where milk production was low and where access to liquid markets was difficult on account of the nature of the country.

Stock feeding and farm household consumption accounted for 8.6 per cent, as compared with an estimated 10 per cent for the whole country. Here again, the presence of a large liquid demand has reacted on calf-rearing. For example, in the southwestern counties, the number of cattle under one year in relation to the number of cows in milk is about double that of Derbyshire.

Bearing in mind the proportions disposed of by wholesale, direct retail, domestic manufacture and calf-feeding, for the whole county, it is of interest to consider the figures for each of three separate districts in the county, the first high-lying, relatively unproductive and sparsely populated, the second at a lower level, considerably more productive and with a comparatively large industrial population living in small towns, the third low-lying, highly productive and with only an agricultural population.

The rough and inaccessible nature of the country in District 1 has led to a much higher percentage utilisation of milk for domestic manufacture and calf-feeding than rules for the county as a whole (table 1). There is a slightly higher than average percentage of producer-retailing. As production was low and the country difficult of access, there was little inducement for the wholesaler to operate.

District 2 is densely populated, the population living in industrial villages and having a low standard of living. Producer-retailing accounted for nearly 70 per cent of the total output, as compared with 14 per cent for the whole county (table 1). The proportion wholesaled was low, owing to the demands of the industrial population of the villages. The proportions used in domestic manufacture and calf-feeding were a little less than the average for the county as a whole.

In District 3 which is highly productive and purely agricultural the wholesale market prevails entirely. Producer-retailing and domestic manufacture and calf-feeding are negligible (table 1).

It is not possible here to follow these percentages through the

twenty-six districts into which we divided the county. But enough has been said to indicate the extreme variations of marketing methods within a single small county, and to emphasise the difficulty of finding common ground, even in this one small county, on which farmers might base their organisation for the control and greater efficiency of their milk marketing. Not less do these figures emphasise the danger of drawing conclusions from the general average of the county and assuming that this average might be generally applied with any useful result. Sound marketing organisation will have to be based on a thorough knowledge of local conditions, and must follow the accumulation of such knowledge along the lines adopted for Derbyshire.

Liquid milk was sent out of the county chiefly to London and to the Sheffield and Manchester areas. Small quantities went to Birmingham, Nottingham and Burton-upon-Trent. Milk was exported from all parts of the county, although the quantities leaving the area to the east of a line drawn from Derby to Sheffield were small in relation to total production. Consumption in this part of the county was only little short of equaling production. In the southwest of the county more than ninety per cent of the total production was exported or manufactured.

Save for small quantities of milk delivered to the consumer or collected by the buyer for Nottingham, Sheffield, Manchester, Burton-upon-Trent and Birmingham, the producer made use of the railway for liquid export. Where wholesale depots existed for the purpose of reconsigning liquid milk to distant markets, it was found that the farmer usually made use of these depots in preference to railing on his own account. The practice therefore of supplying a distant buyer prevailed chiefly where milk production was considerable, where there were depots accessible to the farm, where railway communications with London, Manchester, and so forth, were convenient and where local liquid demand was small. As a rule, farmers railed to a distant market out of necessity, owing to the absence of factories or depots or of a large local consuming population. In the absence of large population, convenient rail communications, and of factories and depots, the producer had, perforce, to feed or to manufacture his milk on the farm. Under similar circumstances, save for convenience of access to a railway, the producer of quantities too small for economic railing was compelled to manufacture or feed on the farm.

The amount of milk exported direct by the farmer, and collected by the buyer outside the county was 48,000 gallons per day, exclusive of that delivered to or collected by depots for liquid export (chiefly to London) or, roughly 46 per cent of the total production. To this quantity can be added at least 11,600 gallons per day exported by wholesale depots, making a total of 59,600 gallons of liquid milk exported per day. Manufacturers purchased 15,800 gallons per day, and of this quantity, a considerable proportion is known to have been exported for liquid consumption.

The following were the channels of milk marketing employed in Derbyshire:

1. Producer to consumer.
2. Producer to retailer.
3. Producer to wholesaler.
4. Retailer to manufacturer.
5. Wholesaler to retailer.
6. Wholesaler to manufacturer.

Producer-retailing accounted, over the county as a whole, for 14.2 per cent of production. It ranged from a maximum of 65.9 per cent in an industrial area to 0.4 per cent in a purely agricultural and milk exporting area. In certain industrial districts producer-retailing was of small account owing to the activity of industrial co-operative societies. Producer-retailers, although they worked on a wide margin, charging the full retail price, had the appearance of poverty. Their small scale of working involved high overhead and distributive costs per gallon, so that their apparent wide margin of profit was, in reality, small. In Derby, the one large town of the county, producer-retailers handled only 8 per cent of the town's requirements. In Chesterfield, the second largest town, with a population of 62,000, and in a number of other considerable industrial centres, producer-retailers distributed nearly 50 per cent of the milk consumed. It was clear that producer-retailers, failing a trading organisation on their part to stabilise and control prices and to reduce distributive costs per gallon, must give way to the industrial co-operative societies. There was no evidence whatever that producer-retailers were minded or were capable of much organisation. In purely agricultural areas the producer-retailer will probably continue to provide the non-agricultural population with its milk requirements. The quantity thus handled must

always be negligible in terms of total production. In all cases, producer-retailing was undertaken by the small farmer. The large farmer, even in industrial areas, sold wholesale. There was, in fact, evidence that producer-retailing, similarly to domestic manufacture, was not the choice of the farmer, but an outlet utilised by him in the absence of any other. His output was too small for the wholesale market. In almost every case the producer-retailer employed no other labour than that of his family for distribution, and so the actually high distributive costs per gallon were concealed. It appeared not to affect the price charged by the farmer whether the milk was delivered to or collected by the consumer. As a very general rule the farmer delivered.

PRODUCER TO RETAILER

The producer might sell to a local retailer, or to one at a distance, and he might deliver his milk to the retailer or it might be collected by the retailer. There were cases, too, where the producer met the retailer with his milk at a point half way between their respective premises. In rare cases, too, the retailer, situated at a distance, paid the rail charges on the milk, but the net result to the producer was the same. As a very general rule, the retailer collected the milk from the farm. Delivery by the farmer was practically confined to sales to the small retailer. Instances were found where a single large farmer provided the full requirements of a single retailer. In the present survey, milk sold to the retailer relates to retailers within or adjacent to the county. Milk sold to retailers at a distance almost invariably meant milk despatched to London, and has been included as wholesale milk.

The proportions of the total production sold to the retailer varied extremely over the county. For example, in a purely agricultural district, the sales to the retailer were nil, while, in an industrial district where the industrial cooperative movement was largely engaged in milk selling, the proportion sold to the retailer was 65.7 per cent of the total production. The average for the county was about 16 per cent. Obviously the retailer was found only where towns existed, but not invariably, since, in some towns and industrial areas, the producer-retailer controlled the bulk of distribution. In Derby itself, as might be expected in a town of its size, the retailer prevailed. Otherwise, in the smaller towns, his relative importance appeared to be quite fortuitous, apart from

the operation of industrial cooperative societies. In certain of the smaller towns, where the industrial cooperatives were not concerned in milk distribution, private retailers, each working on a small scale, distributed the bulk of the town's supply. It was noticeable that the retailers agreed as to the prices paid farmers and the price charged consumers, and adhered strictly to their agreement. In rare cases the retailer dealt only in milk and dairy produce, but, as a general rule, he also followed some other quite distinct occupation.

PRODUCER TO WHOLESALER

The wholesaler might be a dealer in liquid milk or a manufacturer, and he might combine retailing with wholesaling. His market might be local or distant and he might be no more than a collecting or commission agent or a speculative dealer seeking a day to day market. The wholesale liquid exporter, save in the case of a single agricultural cooperative society, collected the milk at a depot and railed it to London. The manufacturers collected milk, and made it into cheese or proprietary foods on the spot. As a general rule, the large farmers, where both outlets were available, sold to the wholesale liquid exporter and maintained a fairly level output winter and summer, while the smaller farmers sold to the manufacturer and produced the bulk of their milk in the summer. Where the manufacturer collected, without competition of other wholesale buyers, the large farmer usually sold to the manufacturer, and produced the bulk of his milk in summer, or sold to the manufacturer in summer and railed his milk to London in the winter. Again, and usually, he might rail his milk to London direct the year round.

Sales to the wholesaler were, obviously, highest in purely agricultural districts of high production and lowest in industrial and densely populated districts, and ranged from 89.6 per cent to two per cent of the total production. Sale to wholesalers was associated with the larger farmers. In almost every case, the milk was collected from the farm by the buyer, so that the functions of production and distribution were sharply distinguished. In fact the existence of the wholesaler, working always on a fairly large scale, has led, to a greater extent than any other agency, to efficient and orderly marketing. Unfortunately, as the farmer, through the intervention of the wholesaler, has lost all part in

marketing, and as he sells his total output the year round to the wholesaler and so ceases to be able, in emergency, to manufacture his milk, the wholesaler has secured a very much greater influence in price-fixing than the farmer. In fact, over the whole country, in spite of the quantities of milk sold direct to the consumer or sold to the retailer by the farmer, or manufactured on the farm by the farmer, it has become a common belief that farmers and wholesale distributors by agreeing as to prices and terms between themselves, speak for the whole industry.

Our survey revealed the practical disappearance of other methods of sale than to wholesale exporters and manufacturers, in purely agricultural districts with good road and rail communication. It indicated, further, that, even in the thickly populated eastern side of the county, where there is not a great density of dairy herds, production considerably exceeded local consumption as a general rule. A very large town, clearly, is required to absorb the output of any considerable dairying district, and even so the surplus over liquid requirements of the large centres of population is such that, in intensive dairying districts, the manufacturer is able to operate.

RETAILER TO MANUFACTURER

The retailer sold only his surplus to the manufacturer, and even then rarely. The amount of milk sold under this heading was quite negligible. The large retailers usually made cheese, and the smaller retailers ice cream or butter, of their surplus. But in some cases the retailer sent his surplus to the manufacturer in the summer. The small retailers had not sufficient surplus to send thus and the very large retailers were usually equipped for cheese manufacture.

WHOLESALE TO RETAILER

Within the county, the quantity of milk sold by the wholesaler to the retailer was negligible, save for week-end accommodation milk procured by the retailer from depots or factories.

The considerable movement of milk from wholesaler to retailer in the town of Derby is discussed elsewhere.

In a few cases wholesalers bought milk, delivered to the station platform, and consigned it to various distant markets as demand arose.

There must, of course, have existed a considerable transfer of

milk from buyers in Sheffield, Manchester, London, and so forth to retailers, but these transactions lie beyond the scope of the present survey.

Certain agricultural cooperative societies and individuals, for a fixed commission, usually one-quarter pence per gallon, in several cases, £1 per month, and in one case £3 per month, found a buyer for the producer's milk, the producer transacting the sale direct with the buyer.

WHOLESALE TO MANUFACTURER

In the summer, certain agricultural cooperative societies and wholesale depots sold their surplus above liquid requirements to manufacturers. As a general rule, however, these societies and depots manufactured their surplus into cheese on their own account.

PRICES AND MARGINS

I have been compelled, in the interests of your patience, to leave out a summary of prices and margins. They are, however, available for anyone who may wish to review them. Briefly, the producer-retailer charged the full retail price and was yet obviously on a subsistence level, owing to his high overhead charges per gallon. He appeared quite unable to form an organisation to prevent price cutting, and so the level of all producer-retailers was that at which the one making the lowest demands on life could exist. Retailers worked on a margin of 7 pence to 11 pence, and, for the various districts, supported one another firmly. They paid the farmer from 9 pence to 1 shilling 6 pence in the summer, and from 1 shilling to 1 shilling 10 pence in the winter. They rarely bought by contract, and always by two six-monthly periods, winter and summer. The industrial cooperatives, on the other hand, made use of elaborate contracts, the price to the farmer varying almost every month. The wholesaler paid from 7 pence to 10 pence in the summer and from 11 pence to 1 shilling 5 pence in the winter, the farmer paying transport at about one-half penny per gallon. The so-called national agreement between farmers and distributors was in force only in one very small district. It was an ideal which the farmer did not even aspire to attain. I must, however, give you some indication of the diversity of prices. It is quite impossible to reduce them, or any form of sale in Derbyshire, to coherence. I think we found some five hundred prices, excluding those

of individual application. Retailers' prices to the farmer for a single industrial town are given in table 2. I have included also the price to the consumer.

Table 2. Prices Paid Producers for Milk, Together with the Retail Price of Milk, in a Single Industrial Town in Derbyshire, England*

Six-months period	Range in prices paid producer per gallon	Range in retail price per gallon
April-September.....	1 s. 0 d. to 1 s. 8 d.	1 s. 8 d. to 2 s. 0 d.
October-March.....	1 s. 3 d. to 1 s. 8 d.	1 s. 8 d. to 2 s. 0 d.

* Prices paid farmers are for delivered milk.

From the survey it was clear that it cannot be said that any one price to the farmer prevailed, although 2 shilling was the ruling retail price. At a price to the farmer of from 1 shilling to 1 shilling 3 pence and at a retail price of from 1 shilling 8 pence to 2 shillings, the retailer's margin would be from 8 pence to 9 pence.

I must mention also typical contract prices paid by the large retailer to the farmer.

Table 3. Typical Contract Prices for Milk Paid by a Large Retail Organisation, Derbyshire, England

	Contract price per gallon	
	s.	d.
Contract Number One:		
October to March inclusive.....	1	3 $\frac{3}{4}$
April, August, and September.....	1	0
May to July inclusive.....	0	10
	} less $\frac{5}{8}$ d.*	
Contract Number Two:		
October to March inclusive.....	1	3 $\frac{3}{4}$
April and September.....	1	0
May and June.....	0	10
July and August.....	0	11
	} less $\frac{3}{4}$ d.*	
Contract Number Three:		
November to March inclusive.....	1	3
April, September and October.....	1	0
May to August inclusive.....	0	10
	} less $\frac{3}{4}$ d.*	

* Deduction per gallon to cover collection charge.

The three contracts shown in table 3 were issued by the same industrial cooperative society to farmers in the same village. The charge for collection did not vary with the distance of the pro-

ducer from the depot, but irregularly, according to the prices paid to the farmer for his milk. It was found, in fact, to be a common practice on the part of buyers, in cases where they paid high prices, to charge more than usual for collection.

Typical price agreements between farmer and manufacturer are shown in table 4.

Table 4. Typical Milk Price Agreements Between Farmers and Manufacturers, Derbyshire, England

	Contract price per gallon	
	s.	d.
Agreement Number One:		
October to March inclusive.....	1	0
April, May, and June.....	0	7½
July, August, and September.....	0	9½
		} less ½ d.*
Agreement Number Two:		
October to March inclusive.....	1	2
April to August inclusive.....	0	10
September.....	0	11
		} less 3 ½ d.**
Agreement Number Three:		
November to February inclusive.....	1	1
October and March.....	1	0
April and September.....	0	9
May to August inclusive.....	0	8½
		} less ½ d.*

* Deduction per gallon to cover collection charge.

** Deductions as follows: Rail charge 2 pence.
Creamery charge 1 pence.
Collection charge ½ pence.

I must pass on with this entirely perfunctory mention of prices. They are so diverse and so complicated that brief explanation or description of them is impossible.

FACTORIES, DEPOTS, AND RAILED SUPPLIES

Factories and depots operating in Derbyshire or deriving a part of their supply from Derbyshire were fourteen in number, and were concentrated, so far as the large businesses were concerned, in the southwest of the county where milk production was most intensive.

The collecting radius of each factory and depot at its maximum was 15 miles, as compared with 50 miles in the southwestern counties. There was no evidence, from reports during the col-

lection of the materials for the present survey, that the various factories and depots had reached any agreement as to the territory each should cover. In surveys of other parts of the county agreement of this character was apparent from the fields of collection of the larger factories and depots, as well as from the reports of the farmers. In Derbyshire, factories and depots were not found in the industrial districts or in those of low production, although the bulk of the production from the latter was exported liquid. The depots of the industrial cooperative societies were equipped for pasteurisation and for cheese-making. In only one case, however, was the depot situated outside the town where the milk was retailed.

In all cases save one, the factory or depot collected the milk from the farm.

As, with few exceptions, the milk is delivered by the farmer, the distance from which milk can be consigned by rail is limited to the distance that can be travelled by horse and float. It is noticeable that milk was railed from all parts of the county, including the industrial areas where population is high and milk production not intensive.

Whereas the larger factories in the southwest of England handled upwards of 40,000 gallons each per day, in June, 1927, the largest factory in Derbyshire handled less than 9,000 gallons per day at the time of the survey.

The total quantities received by factories and depots per day in June was 27,356 gallons. At the request of certain agricultural cooperative societies and private firms, the exact quantities handled by each factory are not disclosed.

There was general agreement that the collecting services by the retailers of Sheffield, Manchester and Derby, and of the factories and depots, had not only diminished the quantities carried by the railway of late years, but had brought into the field of liquid supply of these large towns and of the factories and depots, parts of the county where previously either milk had not been produced or it had been utilised for domestic manufacture, or for rearing.

DOMESTIC MANUFACTURE AND CALF-FEEDING

The proportion fed to calves was fairly constant for all parts of the county, while the quantity used in domestic manufacture varied extremely. Roughly, in the intensive dairying districts and

in the industrial districts, the percentage fed to calves was lower than in the high-lying, unproductive and thinly populated districts. In the former districts, a ready market existed for liquid milk, whether by export or by local demand, and liquid sale, where a market was available, was always preferred to calf-feeding.

It appeared to be the general practice, in Derbyshire, to rear sufficient heifer calves to maintain the herd. In parts of District 4, where the most intensive dairying was found, sufficient calves were not reared to maintain the herds.

The quantities indicated in this survey as being fed to calves, include small quantities fed to pigs—especially in the northeast of the county—and the liquid requirements of the farm household and the allotments to labourers employed on the farms. These figures, in fact, represent the quantities of milk retained on the farm and not manufactured on the farm for sale.

A very rough estimate, based on the agricultural population of Derbyshire, and the presumed number of employees receiving one pint of milk per day as a part of their wages, shows a human consumption on the farms of 1,250 gallons per day, leaving 7,619 gallons per day fed to calves, or 7.3 per cent of the total production.

Over the county as a whole, 8.6 per cent of the total production was used for calf-feeding and for farm household consumption. The percentages fed to calves and consumed in farm households ranged from 12.3 per cent in a moorland district to 4.4 per cent in a purely agricultural and highly productive district and 3.6 per cent in a densely populated district of industrial towns.

It is evident, from the above figures, that calf-feeding is most prevalent where population is low and where milk production is not intensive. On the whole, however, the percentages used in calf-feeding are more equal, for all parts of the county, than are the percentages disposed of by other means, due to the general practice of rearing sufficient calves to maintain the herd. Feeding for veal, or rearing for beef or for sale as down-calvers or stores, was not of great importance in the farming practice of the county.

A few farms were found where butter was made for home consumption. Domestic cheese and cream manufacture was rare. As a general rule, butter-making farms also sold liquid milk. The manufacture of butter was, in fact, a means of disposing of the surplus over liquid sales. In the northwest of the county, however,

in remote situations, the whole milk production was devoted to butter-making and calf-feeding. In the eastern part of the county, butter was made by the producer-retailer of the surplus over the requirements of his round. In the intensive dairying districts, where factories and depots were situated which provided a market for the full liquid output, the making of butter for sale was almost entirely absent. The following are the daily quantities disposed of by domestic manufacture for sale, per day: butter, 2,167 gallons, cream, 136 gallons, cheese, 51 gallons.

The usual assumption that domestic cheese-making in Derbyshire is an important industry is seen to have no basis in fact. Cream-making appeared to be on the decline, owing to the recent regulation prohibiting the use of preservatives, and owing also to the competition of cream worked up from imported dried milk and butter.

Over the county as a whole, domestic manufacture accounted for 2.4 per cent of the total production. Domestic manufacture, in contrast with calf-feeding, showed wide variations in the percentages of the total production utilised for this purpose. In a moorland district, inaccessible to liquid markets, 15.9 per cent of the production was used in domestic manufacture, while in a highly productive agricultural district with good access to markets only 0.1 per cent of the production was used in domestic manufacture.

From the foregoing figures, it is evident that domestic manufacture occurred chiefly in the high-lying district of the northwest with poor access to liquid markets. Domestic manufacture was general, also, throughout the industrial districts. It was of interest to note that domestic manufacture was not necessarily associated with calf-rearing. For example, in District 6, where the percentage of production fed to calves was considerably higher than the average for the county, butter-making was negligible.

Almost invariably, the butter-maker supplied private customers direct. In a few cases the butter was sold wholesale to provision merchants, or to itinerant dealers. Domestic manufacture was practiced largely because of the absence of other outlets for milk, or to utilise a surplus of production over liquid sales.

AGRICULTURAL COOPERATIVE SOCIETIES

Six agricultural cooperative societies were in operation, one of them with two depots within the county. Of these societies, three

were engaged in cheese manufacture, though they sold, as far as possible, on the liquid market in the winter. The prices paid by these societies compared very favourably with those paid by private firms, and their scale of working, also, ranked them among the larger buyers. Save for the cheese-making societies, the co-operative societies were situated in the midst of joint-stock factories and depots, and competed with them directly.

It was noticeable that these societies engaged in the liquid export trade exclusively. They did not attempt to supply the urban and industrial population of Derbyshire. In the industrial parts of the county, no agricultural cooperative dairy societies existed. The market of these societies was London. It would appear that an opportunity exists for farmers to cooperate to exploit the liquid market within the county. At the present moment, the industrial cooperative societies are rapidly taking possession of this market from the producer-retailer, who, if cooperatively organised, might retain his place, but, in his present attempt to sell individually to the consumer, must give way to the industrial cooperative societies. There was a general feeling that further cooperative organisation by the farmer was not warranted. So far as the liquid export market is concerned, this feeling was perhaps justified, but it would appear to be good policy, so far as the internal liquid market is concerned, for the farmers to organise cooperatively, if not to sell direct to the consumer, at least to bargain collectively with the industrial cooperative societies and with the joint-stock factories and wholesale depots.

In some cases the farmers' societies sold their surplus to private manufacturing firms. Although themselves working on a scale considerable for Derbyshire, these societies fixed their prices in compliance with the prices of private manufacturing and exporting firms. There was no prospect that they could so command the confidence of their members as to make payment on the basis of their sales, irrespective of guaranteeing competitive prices with private firms.

There were 415 firms, societies, specialist retailers, producer-retailers and general shops dealing in milk within the borough of Derby distinguished as shown in table 5. Of the seven distributors, five handled less than 400 gallons each per day, two handled, roughly, 1,000 gallons each, and one handled 6,000 gallons per day. The latter was the consumers' cooperative society. Of the

Table 3. Classes of Firms and Shops Dealing in Milk within the Borough of Derby, England

Class	Number
Large wholesaler-retailers.....	7
Dairy shops (inside borough).....	25
Dairy shops (outside borough but selling in borough).....	17
Producer-retailers (outside borough).....	35
Producer-retailers (inside borough).....	9
Shops selling milk and general provisions.....	322
Total.....	415

322 general shops selling milk, only two sold more than $5\frac{1}{2}$ gallons per day, and neither of these two shops sold more than 10 gallons per day. The average milk sales per general shop were 1.4 gallons per day. Eighty-three per cent of these shops sold less than two gallons per day. Slightly fewer than half of these shops sold bottled milk. The number of purely dairy shops within the borough (32, including the large wholesalers) appears to be disproportionately small in relation to the number of general shops selling milk. The dairy shops sold an average of 30 gallons per day. A few of the general shops received milk from the producer direct, but the vast majority received their milk from wholesalers or retailers, within or without the borough.

The total quantity of milk entering Derby per day was 11,286 gallons, including production within the town, while liquid consumption totalled 9,677 gallons, a consumption per head of 0.53 of a pint. This rate of consumption of milk per head was high as compared with that which is assumed for the country as a whole which is just over one-third of a pint per day. At the time of the present survey, the industries of Derby were flourishing. Eighty gallons were reconsigned from Derby for liquid consumption. The surplus entering the town per day above liquid consumption was 1,559 gallons, or 14 per cent of the total handled. This surplus was disposed of in various ways. One wholesaler collected the surplus from a number of small retailers, and sold it to a manufacturer at a distance from Derby. At the same time, this wholesaler manufactured his own surplus into cream, for sale in Nottingham. Other wholesalers and retailers made butter, cheese or cream.

Producer-retailers selling in Derby totalled 44, and sold 764 gallons per day or an average of 17.5 each. Thus they sold only 8.0 per cent of the milk consumed in Derby. It was noticeable that no large producers sold to the consumer direct. All of the producer-retailers with premises in Derby had access to grazing, but stabled their cows in the winter. There were no urban cow-keepers housing their cows the year through. It was usual for producer-retailers, whether situated inside or outside the town, to wholesale small quantities of milk to general shops. They were in the habit of buying extra milk from wholesalers, even when wholesaling a small quantity themselves.

Retail dairymen sold 2,361 gallons per day, or 24.4 per cent of the total quantity consumed. Similarly to producer-retailers, they frequently wholesaled to general shops, although depending altogether for their own supplies upon producers or wholesalers. They appeared to have a high percentage of surplus, which they made into cream or butter, or which they sold back again to a large wholesaler, who, in turn, sold it to a manufacturer at a considerable distance outside Derby.

The seven large wholesaler-retailers, in addition to supplying a considerable part of the requirements of small retailers and by far the greater part of the requirements of the general shops, retailed 6,545 gallons per day or 67.6 per cent of the total consumption.

The liquid supply of Derby was, therefore, controlled by seven large firms and, considering the small scale of working of four of these firms, virtually by three.

In the middle-class district more retailers were found, for the number of households, than in the poor district. Deliveries were made to two households from a distance of more than four miles, and, in two cases, to three households from a distance of three miles. In this district the households were, to a considerable extent, supplied by small retailers. The poor district was, on the other hand, very largely supplied by a single firm, the Derby Industrial and Cooperative Society. A single household was supplied from a distance of three miles; otherwise delivery was from a retailer's premises in the vicinity. A few households in this latter district took no fresh milk.

Delivery in both districts was by motor, motorcycle combination, horse and float, and handbarrow. In the poor district, delivery was almost exclusively by handbarrow.

For purposes of comparison with Derby it may be mentioned that in Chesterfield, with a population of 61,326, the daily consumption of milk per head was just under 0.3 of a pint. At the time of the survey the industries of Chesterfield, largely mining, were in a very depressed condition. Of a total consumption of 2,339 gallons per day, 1,387 gallons, or 52.8 per cent of the total consumption was producer-retailed, and 952 gallons, or 47.2 per cent, was distributed by the retailer buying direct from the farmer. The quantity of milk bought by the retailer from the wholesaler was negligible. The per head consumption of milk in Chesterfield was, therefore, much lower than that of Derby, and, whereas the producer-retailer distributed only 8 per cent in Derby, the producer-retailer distributed 52.8 per cent in Chesterfield. It might have been anticipated that the wholesaler-retailer, and retailer, would handle a larger percentage of the milk supply of a town so considerable in size as Chesterfield.

For further comparison, the milk supply of the town of Ripley is given. Ripley is an industrial and mining town, of 13,890 population. The amount of milk consumed daily was 520 gallons, or just under 0.3 of a pint per head. Similarly to Chesterfield, the industries of Ripley were in a depressed condition at the time of the survey. The producer-retailer distributed 74 gallons per day, or 14.2 per cent of the total consumed. The retailer, buying direct from the farmer, distributed 446 gallons, or 85.8 per cent of the total consumed. The greater part of the retailed milk was distributed by the Ripley Industrial and Cooperative Society. In this area, the industrial cooperatives were driving the producer-retailer out of business, so that conditions approximated to those of Derby, although the two towns were so dissimilar in size.

CONCLUSION

Although some four thousand farmers were found to be producing milk within the confines of this small county, and although, with very few exceptions, this milk was sold liquid, the marketing of milk remained highly individualistic. The buyers, too, were numerous for the quantity handled, and appeared to operate for the most part without price agreements, so far as the farmer was concerned, although there was substantial agreement among the buyers as to the price to the consumer. However, there were fewer than twenty considerable buyers, so that, even with pro-

ducer and buyer working on an individualistic basis, the producer, in that his numbers were so much greater than the numbers of buyers, was placed in a weak bargaining position. It has already been mentioned that certain agricultural cooperative societies exist, but they traded only on the wholesale export market, whereas it would appear that in an industrialised and highly populated county such as Derbyshire, opportunities were available to trade direct with the local consumer. Among producer-retailers, whose margin for distribution was high, the standard of living was obviously low. The high costs involved in delivering small quantities of milk absorbed the wide margin they secured as between the price received by the wholesaling farmer and the price paid by the consumer. But no headway whatever has been made by the producer-retailer in the direction of pooling his distributive services, and, in the industrial parts of the county, it appears probable that the consumers' cooperative societies by virtually pooling the distributive services of a number of producer-retailers, and thereby reducing the distributive costs per gallon will replace the producer-retailer. Among producer-retailers, associations were found of which the object was to prevent under-cutting of price. In practice, while they achieve stability of price for short periods, eventually some member of the association or some farmer outside it, reduced the retail price. When price-cutting was undertaken by a substantial farmer, other producer-retailers had always to reduce their prices in conformity. Where producer-retailers were working in competition with industrial cooperative societies, they were compelled to sell at that price, or lower if they could.

The membership of the National Farmers Union in 1928 in Derbyshire was 2,250.² Even assuming, which is highly improbable, that this full membership represented milk-producers, not more than 60 per cent of milk producers were members of the Union. The milk prices and terms of contract arrived at on a national basis between representatives of the Union and distributors, were not found to be generally observed in Derbyshire. The agreed price was paid chiefly in respect of milk railed direct to London by the farmer. In dealing with the smaller buyers in the county, the producer did not usually sign a contract. Where contracts existed, they showed the widest variations as to price and as

² N.F.U. Yearbook for 1928, page 364. National Farmers Union, 45 Bedford Square, London, W.C.

to the periods during which certain prices should be paid. Sales to Manchester and Sheffield were usually on the basis of two six-monthly periods. Occasionally flat rates were paid throughout the year. In other cases, the price varied almost month by month.

That contracts varied so widely as to price and seasonal period, is an indication of how general is the practice of individual bargaining between producer and buyer. It would be extremely difficult for any non-trading organisation such as the National Farmers Union to establish a common contract for the whole county, especially when not representative of the great majority of farmers. Competition among farmers to secure a liquid market was so keen that a non-trading organisation of producers, to be effective, must control almost the total output of milk and so be able to bring pressure on the buyers sufficient to insist on a common and agreed contract by the threat of withholding supplies. It is difficult to imagine that, under the existing form of producers' organisation, any such effective pressure could ever be brought by the farmer upon the distributor.

It was an unexpected result of the survey that, in a county not especially intensively milk producing and with a large industrial population, the production of milk should so greatly exceed consumption. Of a total daily production of 94,825 gallons, after deducting the quantity fed to calves and consumed in the farmers' households, the survey showed liquid consumption within the county to account for 25,785 gallons, or 27.2 per cent of sales. The milk sales of this industrialised county were, then, more than three times greater than was necessary to provide for the requirements of the population. A few hundred gallons sold in Derbyshire and produced in Nottinghamshire along the eastern side of the county do not affect the main result.

The problem before the farmers is, therefore, not merely one of reconciling the interests of producer-retailing and of wholesaling farmers, difficult in itself, to meet the demands of the local population, but of reconciling the interests of the producers of more than two-thirds of the marketed output of the county who must sell to manufacturers or exporters, or manufacture their milk on the farm.

The distributor's margin was about equal to or exceeded somewhat, the total price received by the producer. There was, unquestionably, evidence of poverty on many milk-producing farms in the industrial and in the high-lying parts of the county. It is

true that there was also ample evidence that, during the few past years, a great number of farmers had turned to milk production as yielding better returns than arable farming, or than grazing for meat or for stores, and that, particularly in the high-lying parts of the county, land was being devoted to milk production where milk production could be justified only by the proximity of large consuming centres as for example, Manchester and Sheffield. Yet some 31,000 gallons per day went to London, considerably more than the total liquid consumption of Derbyshire, while less than 9,000 gallons went to Sheffield, which was the largest external market after London. Manufacture in factories and on the farm absorbed 18,292 gallons per day.

If milk production is to be maintained at its present level in Derbyshire and in many other Midland and western counties, in all of which, presumably, production exceeds, sometimes very greatly, internal consumption, the producer must receive a profit for his operations commensurate with the profit derived by the distributor and manufacturer.

It is clear that organisation of a character different from that of the National Farmers Union is required to enable the farmer to secure equal bargaining power with the distributor. It is not suggested that the farmer should take over distribution, but only that he should be in a position to insist upon its being conducted efficiently and not to the farmer's detriment. Milk handling by the large wholesalers and by the manufacturers is already efficient. However, the overlapping among local retailers and the redundancy of service arising from their small scale of working are clearly detrimental to the interests of producer and consumer. It is of some interest to note that the producer railing milk to London, or selling to wholesalers dealing on the London market, received rather a higher price than producers selling to retailers in or near Derbyshire.

Such is the diversity of marketing methods, arising from the fact that milk may be sold for manufacture, sold to wholesaler or retailer, or may be producer-retailed, and to the further fact that it may be collected by the buyer, or railed, or delivered by the producer, that strong organisation by the producers is difficult to attain and, with production so far in excess of liquid consumption, keen competition among producers for a liquid market is inevitable. Manufactured milk comes into direct competition with imports,

while milk for liquid consumption enjoys a monopoly of the home market. But so long as producers bargain individually, their tendency is, in competing for a liquid market, to bring down the price of milk for liquid consumption nearly to the level of the price of milk for manufacture. The surplus of summer production over winter, amounting for the months of June and December, to 20 per cent, in itself weakens the bargaining power of the producer, as liquid consumption is constant the year round. This surplus must be manufactured, and so comes into direct competition with imported dairy produce at a lower price per gallon than that paid for milk for liquid consumption. The existence of this surplus sold necessarily at prices on a sufficiently low level to compete with imports, tends to lower the price for milk for liquid consumption so long as the producer, bargaining as an individual and with no collective power, lacks information as to the actual proportions consumed liquid, and manufactured. The producer's ignorance of the disposal of his milk is undoubtedly an important factor in the present level of the prices paid to him for his milk.

The producer must organise on some basis that will give him power over the methods of distribution and the right to insist upon being informed as to the relative quantities distributed liquid as compared with the quantities manufactured. Such organisation involves a trading basis, to enable him to meet the organised distributors. Under so great diversity of marketing conditions as exists in Derbyshire, it is first necessary, in contemplating such organisation, to discover some interest common to all producers. This interest is at once apparent in the fact that practically all farmers sell their milk liquid, and that the few who do not sell liquid, are prevented from doing so by their very small output or by bad access to any form of liquid market. What is required, then, is a trading association, made up of all farmers, which will buy the whole output of each farm. Such organisation is known as a "pool". In possession of the full output of a commodity essential to the community, the "pool" would then be able to pass on the milk to wholesalers, retailers and manufacturers. It is not assumed that the "pool" should actually receive and redistribute any but a very small proportion of this milk, but that the "pool" should be the negotiator of each transaction and the legal buyer and seller of the milk between producer and distributor. It is

an advantage to the producers' "pool" that the good-will of the liquid distributor in relation to his customers, is the distributors' chief asset, and that any stoppage of supply would gravely prejudice this good-will. It has been found in practice, also, that the distributor benefits by working with a single association representing all producers rather than by carrying on a large number of negotiations with individuals.

The distributor frequently maintains that he must pay a low price to the producer and charge a high price to the consumer because of the loss he experiences in utilising the surplus he buys above his liquid sales. It appears essential, if the "pool" is to be in a strong position and is to offer a definite advantage to the buyer over existing conditions, that the "pool" should be equipped to manufacture this surplus, and should sell to the distributor at all seasons the exact requirements of his liquid trade. Alternatively, the "pool" might arrange to hand over this surplus to existing manufacturing firms. The concentration of the processes of manufacture of the whole surplus in one or a few centres would greatly reduce the per gallon costs of manufacture.

With regard to producer-retailed milk, it appears, at least from conditions in Derbyshire, that the "pool" should itself become the distributor of this milk. Producer-retailing confined as it was almost entirely to the smallest producers, was necessarily expensive per gallon, and it seemed highly probable that the producer-retailer, in densely populated areas, would, in any case, shortly be driven out of business by the consumers' cooperative societies. The very small quantities of milk producer-retailed in thinly populated agricultural districts might continue to be sold as before.

The formation of a "pool" appears to imply the addition of another middleman in the distributive process, but, failing some similar pooling by the existing buyers, the losses involved in small-scale working, overlapping of collection, and inefficient disposal of the surplus, is such that the entry of a "pool" into the milk industry would, on those grounds alone, be economically justified. But apart from this, there appears to be no other way of strengthening the bargaining power of the farmer, for by this means alone can individual negotiation with the buyer be replaced by effective collective negotiation. As a preliminary to the formation of milk "pools" on a sound basis it is essential to have full knowledge as to existing channels of disposal, and the proportion of output

disposed of by each channel. For Derbyshire such information is now available, and it is reasonably certain that the conditions ruling in Derbyshire are typical of those ruling in the Midland counties generally. Failing organisation on a strong trading basis, there is no prospect that the farmer's bargaining power can do other than decline, so long as the processes of the distribution of milk remain outside government influence or control.

You have heard, very sketchily, results of our milk marketing survey, and I propose to make a confession. Before beginning this job, I described to my chief what were the marketing conditions of Derbyshire, and suggested that a survey would merely make these general ideas more precise. I said that the bulk of the milk would be producer-retailed, that domestic manufacture would be non-existent, that sales to the wholesaler would be negligible and that very little milk would be exported. I do not think there could be a better vindication of the necessity of detailed marketing surveys than to compare the actuality with my original assumption.

DISCUSSION OF MR. PREWETT'S PAPER

Question.—What percentage of the milk sold in cities is pasteurized?

Mr. Prewett.—Over 80 per cent in Derbyshire. Very little milk is bottled.

Question.—Was the extension of the activities of the industrial co-operative societies into the milk marketing field of direct benefit to the farmer?

Mr. Prewett.—Cooperative societies have raised the standard of the milk sold. Not only has the price been lower to the consumer but the quality of the milk has been much improved. The cooperative societies select their producers.

Question.—Is it not true that the Derby Industrial Cooperative Society is noted for establishing good relationships with farmers for milk and other farm products?

Mr. Prewett.—The relations are excellent in every way.

Question.—Does this cooperative society make any inspection of farms?

Mr. Prewett.—Very close inspection. It has access to farms at any time.

Question.—What sort of staff is employed for inspection? Do they employ a veterinary surgeon?

Mr. Prewett.—A skilled staff is employed, although they do not employ a veterinary surgeon.

Question.—Does Mr. Prewett know the per capita consumption of milk in Great Britain? How does this compare with New York?

Mr. Prewett.—The per capita consumption in Great Britain is from

0.33 to 0.35 of a pint per day. In New York the per capita consumption per day is just over one pint.

Mr. Lewis.—Is it possible to get any information as to the effect of the consumption of condensed milk? What is the Public Health point of view with regard to the quality and supply of milk? Does Chicago prohibit the sale of milk not produced by tuberculin tested cows? If so, has this stimulated the consumption of milk?

Dr. Spencer.—There are no data to show the effect upon milk consumption of the requirement that the Chicago milk supply must be from tuberculin tested cows. There is a trend in the direction of tuberculin tested milk. All of the larger cities in the United States require that the milk be pasteurized.

Dr. Ladd.—The consumption of milk has doubled in the last fifteen years in New York.

Mr. Harkness.—Are there any special incentives to farmers to supply milk to the Derby Cooperative Society?

Mr. Prewett.—There are not. The town of Derby is in an intensive milk producing district. The Cooperative has selected farmers of whom they approved.

Mr. Ashby.—Did Mr. Prewett say that the demand for milk was uniform all the year round? What is the basis for this statement?

Mr. Prewett.—The statement is based upon the results of our investigation. Sales are practically constant over the year with some variation such as a slight week-end increase. On certain days of celebration, the society's sales are twice as large as usual. It is necessary to plan for such occasions considerably in advance. There is a slight increase in sales in the fresh fruit season.

Mr. Dykes.—I welcome the fact that agricultural economists are attaching an increasing importance to marketing as a part of their science. Mr. Prewett's analysis seems to be a particularly valuable approach to any study of marketing. The question of the spread of prices as between the producer and the consumer was one about which there was considerable discussion and one about which we knew extraordinarily little. The first thing required was an intensive study of the existing mechanism. In this respect, Mr. Prewett's work was not only of great interest but of first class value.

Mr. Lamont.—Cape Town presents an interesting problem. The town has grown considerably and certain areas used for farms have acquired almost residential site value. Dairymen have control of the milk supply. The farmers mostly grow grain and fruit, producing a large supply of milk for only four months of the year. For the remainder of the year Cape Town must depend upon the specialized dairyman for its milk supply, which means high priced milk. There are very few consumer cooperative organizations in South Africa. I see no solution for the problem of distributing surplus milk unless some organization takes over and utilizes the surplus supply.