ECONOMIC ANALYSIS of BARGAINING PROBLEMS of MILK COOPERATIVES.

By T.G STITTS and WM. C. WELDEN.

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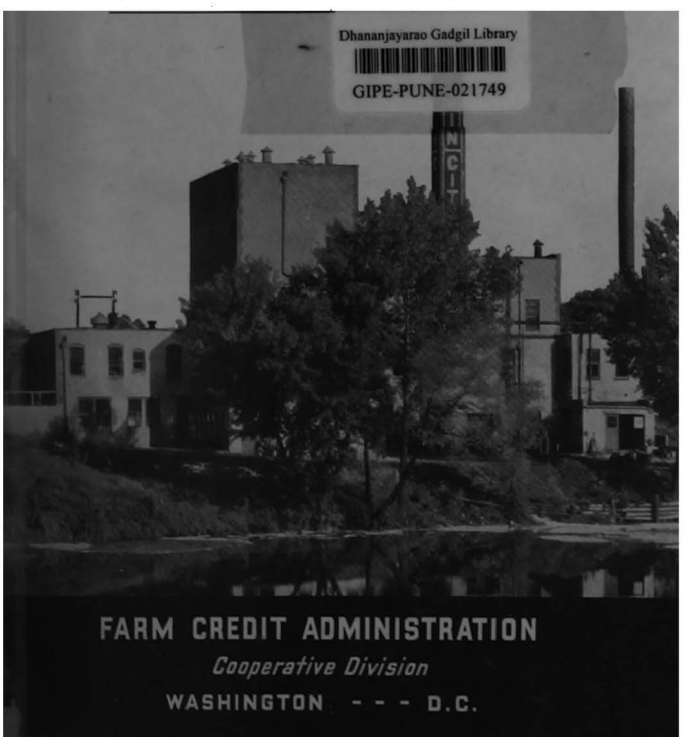

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Economic Analysis of

Bargaining Problems *of* Milk Cooperatives

By T. G. Stitts
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INTRODUCTION

COOPERATIVES which bargain for the sale of the milk of their members to city distributors are operating in practically all of the larger cities in the United States and in an increasing number of smaller cities. Records of the Cooperative Division indicate that approximately half of the fluid milk and fluid cream consumed by the nonfarm population, exclusive of that bought from producer-distributors, is marketed through bargaining cooperatives. These associations negotiate with milk distributors regarding prices and other terms and conditions of sale. Some act solely as agents or brokers and are known as strictly bargaining organizations, while others take title to the milk and manufacture a part of it in plants cooperatively owned or operated. However, all milk cooperatives, except the relatively few which own and operate retail distributing units and sell fluid milk and cream directly to consumers, are primarily bargaining associations.

The work of milk-bargaining associations is divided among a number of activities, and usually varies considerably between markets. A large share of the associations' attention is directed in all cases to negotiating or bargaining with milk dealers and other agencies performing the various marketing functions, such as assembling, testing, hauling, weighing, and processing. Considerable attention must also be given to the relations between the member and his cooperative so

[1] Acknowledgment is made of the helpful cooperation of 19 milk-marketing associations in making available for study their records and other information. Appreciation is also due to members of the staff of the Bureau of Agricultural Economics, U. S. Department of Agriculture, and to employees of the cooperative milk-marketing associations for criticism of this report and for making helpful suggestions.

that members will be able to control the association judiciously and support it in an intelligent manner. Other problems with which a bargaining association must deal relate to the financing of association activities, the rendering of specific services to members, and the performance of certain marketing functions by the cooperative.

Because of the perishability and bulkiness of milk in fluid form and the local sanitary regulations governing its production and almost every phase of its marketing, each city or metropolitan area has many of the aspects of a local market complete in itself. Milk is interchangeable between its use in fluid form and its use in any one of a number of manufactured dairy products for which the market is Nation-wide. This fact operates to establish an economic relationship between markets and to make each local milk market a part of one large national market for all dairy products.

Despite this latter relationship, the problems of milk-bargaining associations are local in character to a large extent, and their solution in each case requires not only a thorough understanding of the problems themselves but detailed information on local market conditions. This is particularly true of problems relating to price levels and market price structures. One of the most important requisites of efficiency and soundness in the management and direction of a milk-bargaining association, therefore, is economic information of a type which allows a thorough analysis by the management, the board of directors, and the members of current problems in the local market.

Purpose and Scope of Study

This circular is based on investigations made in 1936 by the Cooperative Division, at the request of fluid-milk marketing associations, concerning the type of economic information needed and the way in which this information may be used by the bargaining cooperative. The purpose of this circular is to discuss briefly some of the factors involved in pricing milk in the fluid-milk market, to direct attention to the application of statistical data and economic analyses to bargaining problems of the management, and to describe and interpret the experiences of selected associations in the collection, analysis, and use of market records and statistical information.[2] This report has been prepared not only in answer to specific requests, but also with the hope that a much wider interest may be aroused on the part of cooperative milk associations in the analytical type of approach to their marketing problems.

[2] A more technical treatment of the subject would necessarily include: (1) Demonstrations, using data assembled by representative associations, of the manner in which analyses may be made and applied to specific operating problems; (2) more definite recommendations as to the records and statistical data which should be kept by all types of milk cooperatives; and (3) recommended forms on which statistical data may be recorded and filed.

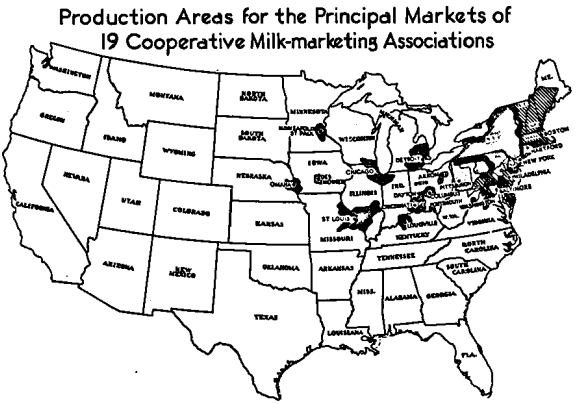


FIGURE 1.

The associations included vary considerably in size and represent a cross section of conditions in the eastern and north central dairy States.

The study is divided into two parts. The first is a discussion of some of the factors involved in marketing fluid milk, which deals largely with the economics of market price structure. The statistical analyses included are based partly on data assembled by the regular statistical services of the United States Government, and partly on original data from associations in Washington, D. C., and Baltimore, Md. The second phase consists of a summary of the record-keeping practices of a representative group of associations and a discussion of considerations affecting their collection and use of statistical information.

The information obtained from contacts with 19 cooperative milk-marketing associations (see p. 51) operating in the larger cities of the East and Middle West (fig. 1) has been summarized and used as a foundation around which the latter portions of the study are built. The associations represented should afford a reliable cross-section of all types of milk cooperatives. They range in membership from 250 farmers to nearly 40,000, and in operating experience from about 5 years to over 20. Some are of the strictly bargaining type which own no facilities and do not in their membership agreements take title to the milk; others perform all of the marketing functions, even to the extent of owning and operating facilities for retail distribution. Several of these associations are well equipped to do research and statistical work.

ECONOMIC FACTORS AFFECTING FLUID-MILK PRICES

BARGAINING as a market function has to do largely with working out the system and determining the prices which shall be paid for a commodity. Consequently most of the difficulties experienced by milk bargaining associations revolve around the price structure and prices received by producers. Many problems grow out of failure of association members to understand the price structure and reasons for changes in price levels. Market stability depends upon the price of milk in relation to competitive prices and other conditions in the area. It follows from this that perhaps the major question facing the bargaining association is whether or not its price structure is sound and can be justified or defended by economic conditions in the market.

Prices themselves, as well as market arrangements affecting prices, are notably complex in the milk market. Milk in fluid form is highly perishable, an excellent medium for bacterial growth, a relatively bulky product, highly valued as a human food, and completely interchangeable between its use in fluid form and its use in any one of several manufactured dairy products. The production of milk on farms is subject to rather wide seasonal variations, while consumption of fluid milk and fluid cream is relatively uniform throughout the year, although subject to day-to-day fluctuations. The marketing system with its class prices, surplus milk, and other price problems which grow out of these conditions is intricate in nature and difficult to understand without some knowledge of the underlying causes.

The importance of prices to the bargaining association and the complexity which is characteristic of price-making in fluid-milk markets warrant some discussion of the basic theories and assumptions underlying the procedure which is followed in most milk markets. A clear understanding of them is necessary to any treatment of the numerous practical questions which must be answered.

Supply and Demand

The price of milk in a fluid-milk market at any time represents the result of the interplay of a number of economic forces. Production and consumption are the basic forces, but each depends upon several factors. Production is influenced by feed prices, prices for other farm products, density of milk production in the area, transportation arrangements, health or sanitary regulations, and other factors. Similarly, population, income, habits of consumers, prices of other foods, and probably additional factors are important with reference to consumption. The factors affecting production will tend to set

the price level necessary before associations can expect any given quantity of milk to be brought into the market, and also to determine the extent to which a higher or lower price level will cause an increase or decrease in that quantity. Likewise, the factors upon which consumption depends will tend to determine the price level at which the available quantity of milk will be purchased by the consumer, and the extent to which a higher or a lower price level will cause a change in the quantity of milk purchased.

The distinction between cause and effect in these concepts may not be clear, but neither is it particularly important for the purposes of this study. If the price level is changed, changes will likely also occur in the rate of production and of consumption. If either supply or consumption, on the other hand, increases or decreases, the price level becomes unstable and will probably change.

Class Prices to Dealers

Consideration of price in practically all fluid-milk markets is complicated, to some extent, by systems of "class prices". Under these systems, milk which is sold for different purposes by distributors is classified separately and is bought by them at prices which vary according to its use. In most markets, accordingly, milk that is sold by dealers to consumers as whole milk is in one class; that going into fluid cream may be in a second class; all other milk sold to dealers may be in a third class, or in one of several other classes or subclasses covering each of the products in which the milk for manufacture is used.

The quantity of milk to be sold as whole or fluid milk and as fluid cream represents the everyday demands of consumers in the market. To have a quantity sufficient for these demands is the primary aim of producers and distributors in the area. Variations in sales are such that approximately 20 percent more milk may be needed for fluid-milk and fluid-cream sales on some days than on others. Since milk cannot be stored, a daily reserve supply is necessary. Daily and seasonal fluctuations are also characteristic of milk production, and those dairy farmers whose commercial supply of milk may be just sufficient to meet fluid sales requirements on some days, on other days may have a much larger quantity available for market. Their entire supply must be sold in order to keep them in the market and insure a sufficient quantity of milk at all times. Surplus milk, as the excess quantities described above are called, therefore, is a definite part of the milk supply.

The best practicable methods for adjustment of supply to demand have reduced the quantity of surplus, but several factors hinder close adjustment. Surplus milk in the market is converted into ice cream,

butter, or other manufactured dairy products; and the prices which can be realized for it are much less than those obtainable for milk sold as fluid milk or as fluid cream.

The phenomena of class prices are not disturbed by the fact that in many markets the milk used in all classes or all products may have been produced under exactly the same sanitary standards, and may have reached the dealers' plants as whole milk, thus incurring the same transportation charges. Competitive supply conditions vary, and the monetary returns which distributors can get are different for milk sold as fluid milk, fluid cream, and surplus milk. Class prices are a reflection of these differences.

Methods of Payment to Producers

Farmers shipping milk into the market usually receive one check each month or pay period for the quantity shipped. The amount of the payment divided by the units of milk shipped will indicate an average price which producers receive. Under the class-price system, this average is calculated upon the theory that a part of each producer's milk is used in each of the different classes or products, and it will accordingly be somewhere between the higher class 1 or fluid-milk price and the lower surplus price.

All milk shipped into market by an individual producer in any period may have been used by the distributor as fluid milk, or all may have been used in some other product. For each distributor,[3] however, and for the entire market, total milk receipts are apportioned among each of the several products, and analyses of sales reports will show the percentage of the total in each class. The average price to each producer is calculated by applying these percentages to the separate class prices. If the percentage figures used pertain only to the sales of the distributor to whom the producer shipped, the average price is known as an "individual dealer pool" price. On the other hand, if the percentages used pertain to the combined sales of all milk of association members or all shippers in the market, the resulting average price is a "market pool" price.

Average prices to an individual shipper may be affected also by market arrangements designed to regulate milk shipments so as to bring about a closer adjustment between receipts and sales. Base and surplus plans, for example, are used in some markets to provide a "base", or a "quota" quantity of milk for each producer, calculated according to the previous shipping record of the producer in relation to that of other producers and in relation to sales in the market. The price system is set up so that a higher price is paid for base milk and a lower price for milk in excess of the base quantity. In this way a

[3] Associations disposing of milk independently of local distributors can also be termed distributors for these purposes.

producer whose shipments correspond closely to his base quantity receives a higher average price than one whose shipments include a considerable quantity of excess over base. In other markets, the same objective is sought by paying direct premiums to producers whose shipments have been comparatively even throughout the year. Prices may be affected in still other markets by paying premiums to producers in certain sections of the milkshed or by allotting larger bases to producers in some sections to offset higher costs or to meet competitive supply problems.

Price Objectives in Cooperative Milk Marketing

In this complex economic picture, bargaining associations, by extending their control over many of the marketing functions, have been able in some instances to change or modify the effect of a few of the separate price-making forces. On the whole, however, their influence has been limited to getting prices as favorable to producers as possible under existing conditions. Their main objective as bargaining organizations has been to obtain for their members as high a price for their milk—both temporarily and over the longer period—as production and consumption or supply and demand conditions in the market area would warrant.

The responsibilities of an association working toward this objective involve working out a practical system of class prices applicable to the market; adjusting market receipts to market sales as closely as is practicable, both on a seasonal and an annual basis; arranging for the

Figure 2.—Conference Room for Bargaining of the Maryland and Virginia Milk Producers Association, Washington, D. C.

Charts showing trends in production and sales, and a blackboard for current analysis of market conditions are used in determining association policies.

handling of surplus milk and for an equitable distribution of the burden of surplus over all dealers and all producers in the market; reducing the costs of the performance of the separate marketing functions to a minimum, either by cooperative performance of the functions or by bargaining with other market agencies; and generally maintaining a price level and a marketing system which can be understood by producers and will lend stability to the market. The manner in which these responsibilities are discharged determines the effectiveness of the cooperative in bargaining (fig. 2). Unless it can work out and administer price structures which are economically sound, and can carry its price problems to members, it has little chance of success in its efforts to improve milk marketing conditions.

Two of the fundamental problems in milk marketing, especially with regard to the efforts of the bargaining associations to work toward a price structure which will prevent price cutting and lend stability to the market, are (1) the price differentials between milk for fluid use and milk used in manufactured dairy products, and (2) the relationship between prices for milk in the fluid market and prices for other farm products in the milkshed. These problems are treated to some extent in the next two sections as examples of the analytical type of approach to economic problems in the market with which bargaining cooperatives are concerned.

PRICE DIFFERENTIALS BETWEEN FLUID MILK AND MANUFACTURING MILK OR BUTTERFAT

PRICES received by producers for whole milk, delivered to the plants of city dealers and suitable for use as fluid milk or fluid cream, are considerably higher in all markets than prices received in the same area for milk or cream sold to creameries, condenseries, or other manufacturing outlets. If the amount of this price differential in favor of fluid milk is too great, pressure to market manufacturing milk in fluid form becomes a disturbing factor and the fluid price is endangered. If, on the other hand, it is not great enough to cover the additional costs of producing and marketing milk for fluid use, the quantity available for market tends to decrease, and a shortage develops in the fluid market.

It is almost impossible to determine precisely the amount of price differential which can be maintained satisfactorily in any market, because the separate and variable factors that affect the higher cost of fluid milk—transportation costs, sanitary regulations, value of skim milk, evenness of supply, prices consumers are willing to pay, together with local competitive conditions—are not each susceptible of quantitative measurement. Comparative transportation costs can be measured accurately in only a few cases. Likewise, the cost of complying with sanitary regulations is difficult to measure because

overhead expenses on the necessary physical equipment as well as direct operating expenses must be included. After the equipment has been installed, there is a tendency for farmers to continue producing for the fluid market even though the price differential may be lowered. Similar difficulties are encountered in measuring the effect of other factors.

In view of these difficulties, the practical method for arriving at a justifiable differential would seem to be one that takes account of past experiences in the market, and provides upper and lower limits beyond which changes are known to have taken place in supply conditions. For instance, past experiences may have shown that when fluid-milk prices in a particular market are more than 75 cents per 100 pounds above condensery prices, destructive competition develops; and that when the differential is less than 50 cents, a shortage develops.

The factors which justify fluid-milk prices above manufacturing-milk prices are different between markets, and the amount of price differential can be justifiably higher for some markets than for others. Milk is shipped into some markets from points as far away as 300 or 400 miles, while in others the outer limits are less than 40 miles from the city. Sanitary regulations entail heavy expenditures in some milksheds and relatively little direct expense in others. The costs of producing an even supply throughout the year vary because of different farm management practices and producing conditions during winter.

In determining the amount of price differential or price spread that can be maintained satisfactorily in a milk market, local competitive conditions, at every turn, affect the influence of the various other economic conditions. In an area where scarcely enough milk is produced to meet urban milk and cream requirements, there is but a small quantity of manufacturing milk pressing for a market in fluid form, and there are few manufacturing outlets to which commercial dairymen can divert their milk when they become dissatisfied with fluid prices. In such a market, it is probable that a fairly high price differential could be maintained, and that the amount might fluctuate considerably without causing a very great change in market receipts. On the other hand, the spread cannot be so high nor change as much without affecting receipts in a market located in an area producing large quantities of milk for manufacture and having numerous manufacturing outlets. The relative quantity of milk produced, therefore, and the disposition made of the commercial supply in the area apply directly to class price structures.

Density of Milk Production

Striking variations in the relative quantity of milk produced in different sections of the United States are shown by an examination

of census data. Production of milk in 1929 averaged 11.2 gallons per acre of farm land for the country as a whole, but it ranged from 3 gallons per acre in the Mountain States to almost 40 gallons per acre in the Middle Atlantic States. Production per farm reporting milk produced, which averaged around 2,400 gallons in that year for the entire country, was highest in the Pacific, Middle Atlantic, and New England States; as was also production per capita of farm population. Production per capita of urban population, however, was lowest in these sections. In both the New England and the Middle Atlantic States production per capita of urban population was less than half the average for the United States, about one-fifth of that in the Mountain States, and one-eighth of that in the West North Central States (table 1).

TABLE 1.—DENSITY OF MILK PRODUCTION BY GEOGRAPHICAL DIVISIONS FOR THE YEAR 1929 [1]

Geographic section	Milk production on farms	Land in farms	Farms reporting milk produced	Farm population	Urban population
	1,000 gallons	*1,000 acres*	*Thousands*	*Thousands*	*Thousands*
New England	415,304	14,283	96	573	6,312
Middle Atlantic	1,362,227	35,047	284	1,708	20,395
East North Central	2,983,768	110,891	845	4,489	16,795
West North Central	2,919,937	265,488	935	5,068	5,556
South Atlantic	644,891	86,363	648	5,898	5,698
East South Central	646,607	72,817	721	5,095	2,779
West South Central	848,817	183,906	725	5,326	4,427
Mountain	469,472	157,450	198	1,139	1,458
Pacific	761,011	60,525	143	1,149	5,535
United States	11,052,024	986,770	4,615	30,445	68,955

Geographic section	Average production of milk			
	Per acre of land in farms	Per farm reporting milk produced	Per capita of farm population	Per capita of urban population
	Gallons	*Gallons*	*Gallons*	*Gallons*
New England	29.1	4,325.2	724.5	65.8
Middle Atlantic	38.9	4,796.8	797.7	66.8
East North Central	26.9	3,530.6	664.7	177.7
West North Central	11.0	2,964.8	576.1	525.5
South Atlantic	7.5	995.3	109.3	113.2
East South Central	8.9	896.6	126.9	232.7
West South Central	4.6	1,170.2	159.4	191.7
Mountain	3.0	2,795.5	412.3	322.0
Pacific	12.6	5,313.2	662.4	137.5
United States	11.2	2,394.5	363.0	160.3

[1] Data from 1930 Census of Agriculture, Bureau of the Census, U. S. Department of Commerce.

DISPOSITION OF MILK PRODUCED ON FARMS

Variations in the density of production and of urban population affect the disposition made of the milk in each section. In the three southern sections, where production per farm and per capita of farm

population is much lower than in other parts of the country, less than half of the milk produced enters commercial channels except to whatever extent farm-made butter is sold (table 2 and fig. 3). On the other hand, more than 80 percent of the total in the New England, Middle Atlantic, East North Central, and Pacific States enters commercial channels.

TABLE 2.—DISPOSITION OF MILK PRODUCED ON FARMS, BASED ON AVERAGES FOR THE 3-YEAR PERIOD, 1932 TO 1934 [1]

Geographical section	Total milk production	Milk used on farms		
		As whole milk or cream	Made into butter	Fed to calves
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
New England	3,744,333	265,667	256,333	85,333
Middle Atlantic	12,401,333	830,333	691,000	333,667
East North Central	26,973,667	2,465,667	1,242,334	808,667
West North Central	27,548,000	2,976,667	2,188,667	857,333
South Atlantic	5,719,333	1,378,333	2,072,000	115,000
East South Central	5,747,000	1,345,000	2,087,333	69,333
West South Central	7,929,000	1,840,667	2,100,333	122,667
Mountain	4,074,667	515,667	352,333	129,333
Pacific	6,900,000	448,333	155,667	214,333
United States	101,037,333	12,066,334	11,146,000	2,755,666

Geographical section	Skimmed or separated for sale as butterfat	Sold as milk or cream at retail by producers	Sold as whole milk at wholesale by producers
	1,000 pounds	*1,000 pounds*	*1,000 pounds*
New England	306,333	408,667	2,362,000
Middle Atlantic	354,667	1,490,333	8,681,333
East North Central	8,039,667	1,531,667	12,885,667
West North Central	18,312,000	995,333	2,218,000
South Atlantic	383,333	606,667	1,164,000
East South Central	1,060,000	343,000	842,333
West South Central	2,260,667	595,333	983,333
Mountain	1,813,667	306,000	957,667
Pacific	2,040,000	635,333	3,406,333
United States	34,596,334	6,972,333	33,500,666

[1] Data from YEARBOOK OF AGRICULTURE, 1933, 1934, and 1935, U. S. Department of Agriculture.

In the New England and Middle Atlantic States, where production per capita of urban population is lowest, the highest proportion of the total is sold by producers as whole milk either at retail or wholesale. In the West North Central States, where production per capita of urban population is more than eight times as great, only about 12 percent of the total is sold as whole milk.

A more detailed analysis of the disposition of the milk which is sold by producers either as whole milk or as butterfat in the form of cream [4] is shown in tables 3 and 4 and figure 4.

[4] An attempt is made to adjust the quantities entering commercial channels from farms in each section by the quantity of milk or its equivalent of cream shipped in from or shipped out to other sections; but such data are available only for New York, Boston, Philadelphia, and Chicago. Undoubtedly, there is a similar interchange in other market areas, but the chances are that the net quantity involved is negligible and would not materially affect the results.

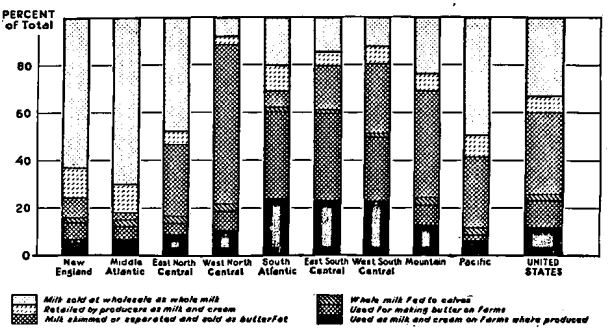


FIGURE 3.—DISPOSITION OF MILK PRODUCED ON FARMS, 3-YEAR AVERAGE 1932 TO 1934.

Except in the three southern regions, less than 25 percent of the milk produced on farms is used for feed and family food on the farm.

TABLE 3.—APPARENT UTILIZATION OF THE COMMERCIAL MILK SUPPLY [1] BASED ON AVERAGES FOR 3-YEAR PERIOD, 1932 TO 1934

Geographic division	Whole milk equivalent of—					
	Milk and cream sold by producers [2]	Net to or from other sections [3]	Total commercial supply	Dairy products manufactured	Milk and cream retailed by producers	Balance of commercial supply [4]
	1,000 lb.	*1,000 lb.*	*1,000 lb.*	*1,000 lb.*	*1,000 lb.*	*1,000 lb.*
New England	3,137,000	−18,316	3,118,684	212,538	486,667	2,437,434
Middle Atlantic	10,526,333	550,518	11,076,851	2,026,555	1,490,333	7,559,963
East North Central	22,457,000	−249,237	22,207,763	15,768,448	1,531,667	4,907,648
West North Central	21,525,333	−74,350	21,450,983	18,672,828	995,333	1,782,822
South Atlantic	2,154,000	−178,606	1,975,394	403,520	608,667	964,907
East South Central	2,345,333	−24,047	2,221,286	1,248,619	343,000	629,667
West South Central	3,865,333	−5,962	3,859,371	1,647,632	595,333	1,616,406
Mountain	3,077,333	(3)	3,077,333	2,168,316	306,000	603,017
Pacific	6,081,667	(3)	6,081,667	3,814,473	635,333	1,631,861
United States	75,069,332	.....	75,069,332	45,963,229	6,990,333	22,133,725
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
New England	100.6	0.6	100.0	6.8	15.0	78.2
Middle Atlantic	95.0	5.0	100.0	18.3	13.5	68.2
East North Central	101.1	1.1	100.0	71.0	6.9	22.1
West North Central	100.3	.3	100.0	87.1	4.6	8.3
South Atlantic	109.0	9.0	100.0	20.4	30.7	48.9
East South Central	101.1	1.1	100.0	56.2	15.4	28.4
West South Central	100.2	.2	100.0	42.7	15.4	41.9
Mountain	100.0	0	100.0	70.5	9.9	19.6
Pacific	100.0	0	100.0	62.7	10.5	26.8
United States	100.0	0	100.0	61.2	9.3	29.5

[1] Data from Bureau of Agricultural Economics, U. S. Department of Agriculture.
[2] See table 2. Milk sold at wholesale, milk and cream retailed, and milk skimmed for sale as butterfat.
[3] Incomplete. Calculated from receipts by State of origin of milk and cream at Boston, New York, and Philadelphia; and of cream at Chicago. Minus sign indicates net excess of shipments from the section.
[4] Total supply minus quantity used in manufacturing minus quantity sold at retail by producers.
[5] No data available.

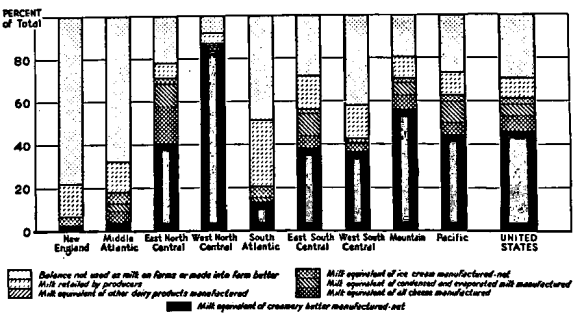


FIGURE 4.—APPARENT UTILIZATION OF THE COMMERCIAL MILK SUPPLY, 3-YEAR AVERAGE, 1932 TO 1934.

Marked differences between regions in the uses made of the commercial milk supply are for the most part a reflection of differences in the relationship between urban population and milk production.

The average total milk equivalent of each dairy product manufactured in each section is shown separately, as is the average total volume of milk and milk equivalent of cream retailed by producers. When these are subtracted from the total quantity entering commercial channels, a balance is left which represents approximately the quantity of whole milk sold by producers at wholesale for use as fluid milk and fluid cream in urban areas. This quantity, plus that retailed by producers, ultimately supplies the demands of the nonfarm population for milk and cream.

TABLE 4.—APPARENT UTILIZATION OF MILK BY DAIRY PRODUCTS MANUFACTURED, BASED ON AVERAGES FOR 3-YEAR PERIOD, 1932 TO 1934

Geographic division	Whole milk equivalent of dairy products manufactured				
	Creamery butter, net [1]	Cheese	Condensed and evaporated	Ice cream, net [2]	Other
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
New England	75,983	8,265	1,673	128,642	
Middle Atlantic	479,410	542,398	389,425	595,983	19,339
East North Central	9,027,384	3,768,298	2,364,228	516,640	91,898
West North Central	18,006,348	240,862	200,563	214,607	10,448
South Atlantic	225,860	8,239	33,300	100,497	874
East South Central	845,956	125,877	228,219	45,680	2,887
West South Central	1,409,995	140,283	18,078	76,148	3,123
Mountain	1,723,485	197,851	186,393	54,960	5,627
Pacific	2,674,023	360,716	607,455	166,840	5,439
United States	34,468,444	5,392,864	4,034,334	1,897,997	139,635

[1] Excluding butter made from whey cream.
[2] Excluding condensed milk and butter used in making ice cream.

Less than 7 percent of the average total commercial milk supply in New England is used for manufacturing purposes (table 3 and fig. 4), and over half of this relatively small quantity is used for making ice cream. This means that over 93 percent of the total is used in the urban centers for fluid milk and fluid cream. Approximately 80 percent of the total commercial supply in the Middle Atlantic and South Atlantic States is used for fluid purposes. On the other hand, in the West North Central States, slightly less than 13 percent of the total is used for fluid milk and fluid cream in the urban areas, leaving over 87 percent for manufacturing. The proportion used in manufacturing is also relatively high in the East North Central and Mountain States.

Practically all of the supply for manufacture goes into creamery butter in the West North Central States; in fact the largest part of the supply in all sections, except the New England and Middle Atlantic States, is used for butter. In the latter two sections, the largest quantity is used in making ice cream. Manufacturers of cheese and of condensed and evaporated milk use a substantial portion of the commercial supply in the East North Central, East South Central, Mountain, Pacific, and Middle Atlantic States.

Price Spreads Between Market Milk and Manufacturing Milk

The wide variation between the quantity of milk produced and the quantity used in the different sections suggests that the economic relationship between market milk and manufacturing milk in one market may be entirely different from that in another. Such differences may show up not only in the price spread, but in the actual price levels for milk used in the various products.

Price comparisons in this study are confined to the four geographic sections comprising the eastern and central western dairy regions. All except 3 of the 19 markets having associations from which data were taken are located in 1 of these 4 sections. The exceptions are Louisville, Baltimore, and Washington. Each of these markets, however, is close to one of these geographic sections, and the economic conditions affecting dairying for these three markets are probably almost as characteristic of one of the four sections as of their own respective section. Louisville, for example, is in the East South Central States, but has conditions very similar to those in the East North Central States. Baltimore and Washington are in the South Atlantic States, but supply conditions in these markets approximate those in the Middle Atlantic States.

Each of the four individual markets in which price comparisons are made has had a cooperative in operation over a 15-year period.

Each market is not presumed to represent, in any way, the entire section in which it is located. It may, however, be as representative as any other market in the section.

Prices of Milk Used in Manufactured Products

In the West North Central States the price received by farmers for butterfat should be an accurate index of the price level for milk used in manufacturing. In other sections prices paid by condenseries and cheese factories are of some consequence. Farm prices are readily available, however, only for butterfat and for milk sold to condenseries. As indicated in figure 3, about 84 percent of the total milk used in manufacturing is made into butter, or condensed and evaporated milk. Prices of milk sold to manufacturers of these products, therefore, should be fairly representative of manufacturing-milk price levels.

Table 5 shows for each of the 4 sections the average farm price of butterfat converted to a milk-equivalent basis and prices received by producers from condenseries manufacturing case goods. In converting butterfat prices, 20 percent of the price of the butterfat in 100 pounds of milk has been added as an allowance for the value of the

TABLE 5.—FARM PRICES OF MILK SOLD AS BUTTERFAT IN THE FORM OF CREAM AND OF WHOLE MILK SOLD TO CONDENSERIES, 1921 TO 1935

Year	Price per 100 pounds of 3.5-percent milk							
	New England States		Middle Atlantic States		East North Central States		West North Central States	
	Sold as butterfat [1]	Sold to condenseries [2]	Sold as butterfat	Sold to condenseries	Sold as butterfat	Sold to condenseries	Sold as butterfat	Sold to condenseries
1921	$2.06	$2.02	$1.85	$2.15	$1.62	$1.86	$1.47	$1.85
1922	1.82	1.79	1.68	1.92	1.52	1.63	1.40	1.64
1923	2.15	2.25	1.91	2.58	1.87	2.18	1.75	2.07
1924	2.02	1.96	1.83	2.07	1.76	1.77	1.63	1.75
1925	2.09	2.05	1.93	2.21	1.82	1.96	1.71	1.85
1926	2.09	2.04	1.95	2.25	1.81	1.93	1.70	1.85
1927	2.17	2.22	2.08	2.41	1.97	2.09	1.84	1.99
1928	2.20	2.24	2.12	2.27	2.00	2.12	1.93	2.03
1929	2.29	2.38	2.04	2.33	1.95	2.05	1.89	1.93
1930	1.92	(3)	1.66	2.01	1.51	1.66	1.44	1.62
1931	1.45	.....	1.22	1.43	1.09	1.16	1.05	1.14
1932	1.16	.....	.90	1.14	.79	.89	.75	.87
1933	1.09	.....	.90	1.14	.84	1.00	.79	.93
1934	1.26	.....	1.03	1.34	1.00	1.15	.96	1.09
1935	1.42	.....	1.22	1.48	1.21	1.32	1.18	1.26

[1] Farm price of butterfat times 3.5 (number of pounds of fat in 100 pounds of milk) plus 20 percent as the assumed value of skim milk retained by the farmer. Butterfat prices for each State were compiled from records of the Crop Reporting Board, U. S. Department of Agriculture; and a price for each section calculated as an average weighted according to butterfat sales in each State, 1930-34, as reported by the Bureau of Agricultural Economics.

[2] Price paid by manufacturers of case goods. Compiled from reports of Market News Service, U. S. Department of Agriculture.

[3] No prices published after 1929.

skim milk retained by the farmer.[5] Even when this has been done, condensery prices have been from 15 to 35 cents per 100 pounds above those for the same quantity of milk sold as butterfat. Both condensery and butterfat prices have been higher in the New England and Middle Atlantic States than in the East North Central and West North Central States.

In table 6 the farm prices for milk sold as butterfat and for milk sold to condenseries have been combined into an average price, weighted according to the quantity of milk used in making creamery butter and in making condensed and evaporated milk (table 4). Substantial differences may be noted between prices in the eastern sections, where little manufacturing is done, and in the central sections, where over half of the milk supply is used in manufacturing. In each case the average prices are assumed to represent the approximate price level of all manufacturing milk—the "competitive price level" as applied to market milk to be used as fluid milk or fluid cream.

TABLE 6.—WEIGHTED AVERAGE FARM PRICES OF MILK SOLD AS BUTTERFAT OR TO CONDENSERIES, 1921 TO 1935 [1]

Year	Price per 100 pounds of 3.5-percent milk				Year	Price per 100 pounds of 3.5-percent milk			
	New England States	Middle Atlantic States	East North Central States	West North Central States		New England States	Middle Atlantic States	East North Central States	West North Central States
1921	$2.06	$1.99	$1.67	$1.47	1929	2.29	2.17	1.97	1.89
1922	1.82	1.79	1.54	1.40	1930	1.92	1.82	1.54	1.44
1923	2.15	2.21	1.94	1.75	1931	1.45	1.31	1.10	1.05
1924	2.02	1.94	1.78	1.63	1932	1.16	1.01	.81	.75
1925	2.09	2.06	1.85	1.71	1933	1.09	1.01	.87	.79
1926	2.09	2.09	1.84	1.70	1934	1.26	1.17	1.03	.96
1927	2.17	2.23	2.00	1.84	1935	1.42	1.34	1.23	1.18
1928	2.20	2.19	2.03	1.93					

[1] See tables 3 and 5. Weighted according to percentage of milk used in making creamery butter and in making condensed and evaporated milk.

Prices of Milk for City Distribution in Fluid Form

Two sets of prices for market milk suitable and used for city distribution in fluid form are available for purposes of comparisons with manufacturing-milk prices. One of these is an average price paid by city dealers in the entire geographical section for milk which has been delivered by producers to local shipping points or at country plants. The other is the class 1 price of cooperative associations in selected cities for milk sold to dealers and delivered to their city plants. Such prices for each section and for one city in each section are shown in tables 7 and 8 respectively.

[5] The extent to which this assumption may be in error at any time does not affect the results for comparative purposes.

TABLE 7.—AVERAGE PRICE PAID BY DEALERS FOR FLUID MILK AND FLUID CREAM DELIVERED AT LOCAL SHIPPING POINTS OR COUNTRY PLANTS FOR CITY DISTRIBUTION, 1921 TO 1935 [1]

Year	Price per 100 pounds of 3.5-percent milk				Year	Price per 100 pounds of 3.5-percent milk			
	New England States	Middle Atlantic States	East North Central States	West North Central States		New England States	Middle Atlantic States	East North Central States	West North Central States
1921	$3.46	$2.76	$2.34	$2.32	1929	3.70	3.03	2.57	2.36
1922	3.03	2.44	1.93	1.92	1930	3.69	2.93	2.46	2.20
1923	3.31	2.81	2.52	2.34	1931	2.79	2.38	1.97	1.84
1924	3.10	2.55	2.48	2.19	1932	2.25	1.70	1.47	1.49
1925	3.32	2.70	2.48	2.19	1933	2.25	1.73	1.36	1.27
1926	3.39	2.70	2.50	2.23	1934	2.58	2.18	1.64	1.57
1927	3.50	2.85	2.54	2.27	1935	2.75	2.31	1.79	1.79
1928	3.60	2.89	2.53	2.32					

[1] Compiled from CROPS AND MARKETS, U. S. Department of Agriculture.

TABLE 8.—PRICES PAID BY DEALERS FOR CLASS 1 MILK F. O. B. CITY TO COOPERATIVE BARGAINING ASSOCIATIONS, 1921 TO 1935 [1]

Year	Price per 100 pounds of standard grade 3.5-percent milk.				Year	Price per 100 pounds of standard grade 3.5-percent milk			
	Boston, Mass.	Philadelphia, Pa.	Detroit, Mich.	Twin Cities, Minn.[2]		Boston, Mass.	Philadelphia, Pa.	Detroit, Mich.	Twin Cities, Minn.[2]
1921	$3.91	$3.01	[3] $2.55	$2.45	1929	4.05	3.55	[3] 2.84	2.76
1922	3.35	2.79	[3] 2.44	2.51	1930	3.96	3.49	[3] 2.68	2.35
1923	3.78	3.37	3.07	2.82	1931	2.82	2.98	2.11	1.88
1924	3.35	3.14	3.00	2.51	1932	2.52	2.29	1.61	1.41
1925	3.63	3.18	3.03	2.64	1933	2.47	2.28	1.65	1.17
1926	3.82	3.22	3.00	2.56	1934	2.96	2.60	2.11	1.71
1927	3.91	3.49	[3] 2.92	2.69	1935	3.19	2.50	2.45	1.85
1928	3.97	3.49	[3] 2.79	2.80					

[1] From records of cooperative marketing associations.
[2] St. Paul and Minneapolis. Price for all milk sold to dealers in the form of whole milk.
[3] Flat price for all milk sold to dealers.

The two sets of fluid-milk prices are not necessarily comparable in any way. In the first place, the individual cities are not presumed to be representative of their respective sections, and it may well be that one city is more nearly representative of its section than another. In the second place, the same set of prices in different cities may not refer to exactly the same part of the milk supply; that is, class 1 milk sometimes refers only to milk sold as whole milk, whereas the average dealers' price refers both to fluid milk and fluid cream. Comparisons, therefore, should be made between the same price in different sections and not between the two prices in the same section.

These data show that market-milk prices in New England over this 15-year period have been considerably higher than those in the central dairy States. This is equally true of dealers' prices at country points and of class 1 prices f. o. b. city. Differences as great as $1.50 per 100 pounds existed during the early part of this period.

Extent to Which Market-Milk Prices Exceed Manufacturing-Milk Prices

Prices paid for milk suitable for use in cities in fluid form, on the average have been higher in each year, section, and market than prices paid in the same area for milk used in manufactured dairy products. This is shown by the data in tables 9 and 10 and figure 5. The amount of price spread has been consistently higher in northeastern markets than in north central markets. This has been true whether the comparison is based on average prices for class 1 f. o. b. city or on average prices for the sections f. o. b. country points. In these sections and markets it is apparent that the spread between market milk and manufacturing milk has been highest in Boston and New England, and has been lowest in the Twin Cities and West North Central States.

TABLE 9.—PRICE DIFFERENTIALS BETWEEN AVERAGE PRICES PAID BY DEALERS FOR MARKET MILK[1] DELIVERED AT LOCAL SHIPPING POINTS OR COUNTRY PLANTS AND WEIGHTED AVERAGE PRICES RECEIVED FOR MANUFACTURING MILK, 1921 TO 1935[2]

Year	Amount per 100 pounds by which market-milk price exceeded manufacturing-milk price.				Year	Amount per 100 pounds by which market-milk price exceeded manufacturing-milk price.			
	New England States	Middle Atlantic States	East North Central States	West North Central States		New England States	Middle Atlantic States	East North Central States	West North Central States
1921	$1.40	$0.77	$0.67	$0.85	1929	$1.41	$0.86	$0.60	$0.47
1922	1.21	.65	.39	.52	1930	1.77	1.11	.92	.76
1923	1.16	.60	.58	.59	1931	1.34	1.07	.87	.79
1924	1.06	.61	.70	.56	1932	1.09	.69	.66	.74
1925	1.23	.64	.63	.48	1933	1.16	.72	.49	.48
1926	1.30	.61	.66	.53	1934	1.32	1.01	.61	.61
1927	1.33	.62	.54	.43	1935	1.33	.97	.56	.61
1928	1.40	.70	.50	.39					

[1] Market milk includes milk used in fluid form for city distribution, either as fluid milk or fluid cream.
[2] Calculated from data in tables 6 and 7.

TABLE 10.—PRICE DIFFERENTIALS BETWEEN MILK COOPERATIVES' CLASS 1 MILK PRICES F. O. B. CITY AND MANUFACTURING-MILK PRICES IN THE SAME AREA, 1921 TO 1935[1]

Year	Amount per 100 pounds by which class-1-milk price exceeded manufacturing-milk price				Year	Amount per 100 pounds by which class-1-milk price exceeded manufacturing-milk price			
	Boston, Mass.	Philadelphia, Pa.	Detroit, Mich.	Twin Cities, Minn.[2]		Boston, Mass.	Philadelphia, Pa.	Detroit, Mich.	Twin Cities, Minn.[2]
1921	$1.85	$1.02	$0.88	$0.98	1929	$1.76	$1.38	$0.87	$0.87
1922	1.53	1.00	.90	1.11	1930	2.04	1.67	1.14	.91
1923	1.63	1.16	1.13	1.07	1931	1.37	1.67	1.01	.83
1924	1.33	1.20	1.22	.88	1932	1.36	1.28	.80	.66
1925	1.54	1.12	1.18	.93	1933	1.38	1.27	.78	.38
1926	1.73	1.13	1.16	.85	1934	1.70	1.43	1.08	.75
1927	1.74	1.26	.92	.85	1935	1.77	1.26	1.22	.67
1928	1.77	1.30	.76	.87					

[1] Calculated from data in tables 6 and 8.
[2] St. Paul and Minneapolis.

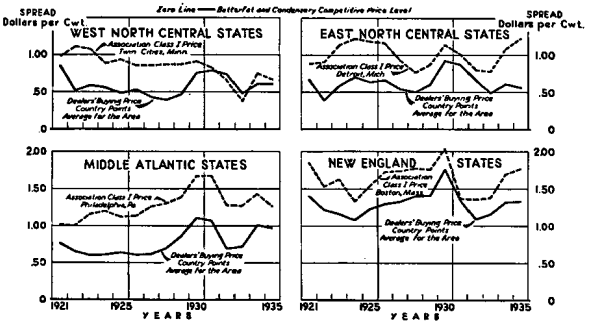


FIGURE 5.—SPREAD BETWEEN FLUID-MILK AND MANUFACTURING-MILK PRICES IN SELECTED CITIES AND REGIONS, 1921 TO 1935.

The spreads between market-milk and manufacturing-milk prices fluctuated considerably in each of these markets and regions between 1921 and 1935, but were higher in each year in the New England and Middle Atlantic States than in the other two regions.

There are at least three factors which may account for the fact that a larger price differential can be maintained in favor of market milk in New England than in the other markets and sections, or from another point of view, must be paid to farmers before they will produce milk for the fluid market. They are: (1) The additional costs of producing milk which will meet city health standards, (2) the additional costs of producing an even supply day after day throughout the year, and (3) the extent and nature of competition for the fluid market. Differences in the primary costs of producing milk without regard to its quality were partly eliminated in the comparisons by using local manufacturing prices in each case, and differences in marketing costs were partly eliminated by using market-milk prices at country points.

Apparently then, it has been either more costly to meet sanitary regulations, more costly to produce in the winter, there has been less competition for the fluid market, or all three of these factors have had a greater influence in New England than in the West North Central States. Data presented earlier in this discussion indicate that competitive conditions were certainly widely different in the two sections, and much keener in the West North Central States. There was a greater supply of milk available in relation to urban population, and a large proportion of it was used in manufacturing channels in the latter section. This undoubtedly accounts in some measure for the fact that market-milk prices have exceeded manufacturing-milk prices by a smaller amount in the West North Central States. The amount

of spread was highest in New England, and successively lower in the Middle Atlantic, East North Central, and West North Central States. As shown in table 3, the average percentages of the commercial milk supply used for manufacturing in each of these sections during 1932–34 were 6.8, 18.3, 71.0, and 87.1, respectively.

Price spreads between market milk and manufacturing milk in each of these sections and markets varied considerably from year to year. There were also rather wide variations in the prices of both fluid milk and manufacturing milk. It is suggested, therefore, that there may have been a fairly constant percentage relationship between the two price levels. Following out this idea, spreads in each year have been expressed as percentages of manufacturing-milk prices (fig. 6).

Such an analysis shows that the spread, as percentages, varied from year to year as much or more than the amount of the spread in dollars per 100 pounds. The percentages were high during periods of low prices and low during periods of high prices. Spreads were high when low prices started at the beginning of the depression, but adjustments have since been made. The percentages have remained high. This indicates that the factors which justify a higher price for fluid milk than for manufacturing milk including transportation and assembly charges, costs of complying with health standards, and the quantity of

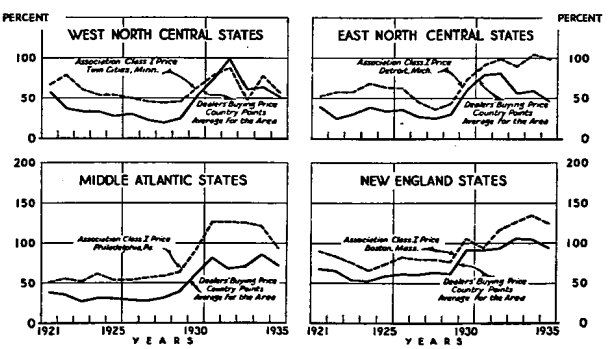


FIGURE 6.—PERCENTAGE BY WHICH FLUID-MILK PRICES WERE ABOVE MANUFACTURING-MILK PRICES IN SELECTED CITIES AND REGIONS, 1921 TO 1935.

During the period from 1930 to 1935 when manufacturing prices were relatively low, the spreads between market-milk and manufacturing-milk prices were about the same as or higher than in the earlier period, so that a new percentage relationship was established.

milk ordinarily produced in the area for manufacturing purposes, did not change as much as butterfat and condensery prices.

The spread between the two prices, then, expressed in dollars per 100 pounds of milk, is a more representative measure than the percentage relationship. Variations in the spread are due apparently to the fact that market-milk prices are more inflexible than prices for manufacturing milk. Price spreads in all sections were high in 1921–22 and again in 1930–31. In both periods there were marked decreases in manufacturing-milk prices without compensating changes in prices in fluid markets.

MILK PRICES IN RELATION TO PRICES OF OTHER FARM PRODUCTS

PRODUCTION of milk for the fluid market is one of many commercial enterprises to which farmers in areas surrounding cities have directed their labor, capital, and land. Just as milk may be marketed in any one of several sales outlets, so may the farmer use his pastures and feed for the production of any one of several livestock products or devote his land to cash crops instead of feed crops. For these reasons, the prices or net returns from alternative farm enterprises will directly affect the price levels which can be maintained for milk.

When milk prices are high relative to those of other farm products, there is an incentive and a tendency for dairy farmers to concentrate more of their resources on milk and less on other farm enterprises, and for other farmers to enter commercial dairying. The reverse is true when milk prices are relatively low, and the extent to which changes are made depends upon whether farm operations and milk market arrangements are flexible enough to allow for wide variations in the volume of milk to be produced and sold in the fluid market. Presumably, the changes begin to take place when net returns from milk are higher than those from other products; but, in most cases, price is the only indication readily available to the farmer of relative net returns from different farm enterprises.

Price Trends and Milk Production in the United States

It is probable that producing other livestock products is the most readily available alternative to dairying as a farm enterprise, because pastures and feeds may be used in these enterprises almost interchangeably. Accordingly, the price level of dairy products in relation to that of grains and more especially meat animals should show whether or not there has been any incentive to increase or decrease dairying. Data on which such a comparison may be based for the United States as a whole are shown in table 11.

TABLE 11.—INDEX NUMBERS OF PRICES OF SELECTED GROUPS OF FARM PRODUCTS AND MEASURES OF CHANGES IN DAIRYING IN THE UNITED STATES, 1921 to 1935 [1]

Year	Index of prices 1910-14=100			Number of milk cows on farms Jan. 1	Milk production on farms	Creamery butter production
	Dairy products	Meat animals	Grains			
				Thousands	*Million pounds*	*Million pounds*
1921	156	109	112	21,440	(2)	1,055
1922	143	114	106	21,822	(2)	1,154
1923	159	107	113	22,099	(2)	1,242
1924	149	110	129	22,288	87,069	1,356
1925	153	140	157	22,575	88,375	1,362
1926	152	147	131	22,432	91,887	1,452
1927	155	140	128	22,286	94,307	1,496
1928	158	151	130	22,287	95,910	1,487
1929	157	156	120	22,508	98,782	1,507
1930	137	133	100	23,106	99,736	1,595
1931	108	92	63	23,885	101,970	1,667
1932	83	63	44	24,982	101,863	1,694
1933	82	60	62	26,030	104,722	1,763
1934	95	68	93	27,059	101,467	1,695
1935	108	118	103	26,236	[3] 101,756	[3] 1,694

[1] Data from U. S. Department of Agriculture, Bureau of Agricultural Economics. [2] Not available.
[3] Preliminary.

The price level of dairy products, in relation to the pre-war level, was above that of grain and above that of meat animals in the United States during every year (except 1925 in the case of grains) from 1921 through 1934. This was a period of steady expansion in the dairy industry. The differences in prices were particularly significant from 1930 to 1933 when generally low prices of all farm products focused more attention on price relationships. Dairy-product prices during the period 1930 to 1933 were slower to decline and did not go to as low a level as those of any other farm commodity group except truck crops. In line with the tendency mentioned above, the number of cows milked during the year was higher for 1933 than for any previous year; total milk production was the highest on record, as was also total creamery butter production (table 11).

PRICE TRENDS IN TWO CITY MARKETS

The same trend in price relationships was undoubtedly evident in practically all milk market areas during this period. It was probably more marked in fluid-milk markets than in the dairy industry as a whole, because fluid-milk prices as a rule are less flexible than those of butterfat and manufacturing milk. They were even slower to go down in 1930 to 1933. At the same time, however, the effect of the trend was modified in many areas by other developments which took place, including the adoption of relatively stringent health regulations in many markets, involving heavy capital expenditures before admission to the fluid-milk market could be gained; by marketing plans in effect in these markets, and by a falling off in the consumption of fluid milk and cream.

In order to determine the extent to which milk-price levels have been above those of other farm products during the last few years, and the effect of such relationships upon market receipts, analyses have been made by the Cooperative Division in the milksheds of two eastern markets—Washington and Baltimore. The important farm products of the areas, other than milk, were selected; and the normal quantities sold by farmers were determined from records of the United States Department of Agriculture. Using these quantities as weights, a composite price index for these products was calculated with 1910 to 1914 as the base period. Average milk prices received by members of the respective cooperative associations were then expressed as percentages of milk prices in the 1910 to 1914 period to obtain index numbers of the price of milk. A comparison of the two indices showed the extent to which the milk-price level was above or below that of other farm products in the milkshed.[6]

Milk Prices in Washington, D. C.

In the Washington market area, the price level of milk, as indicated by the weighted average prices of milk sold through the association studied, apparently did not decrease nearly so much during the period of low prices, 1930 to 1933, as the price level of other farm products (table 12). Milk prices, based on the years 1910 to 1914, were higher

TABLE 12.—RELATIONSHIP BETWEEN FARM PRICES FOR MILK AND FOR OTHER SELECTED FARM PRODUCTS IN THE AREA AROUND WASHINGTON, D. C., 1924 TO 1935

Year	Weighted average price per gallon of milk f. o. b. city [1]	Index of milk price, 1910–14=100 [2]	Index of prices of other farm products, 1910–14=100 [3]	Percentage price of milk exceeds that of other farm products [4]
	Cents			*Percent*
1924	31.92	161	128	26
1925	31.87	161	147	10
1926	32.50	164	143	15
1927	32.83	166	139	19
1928	32.50	164	150	9
1929	33.18	168	149	13
1930	32.49	164	120	37
1931	29.79	150	92	63
1932	26.24	133	69	93
1933	24.56	124	74	68
1934	24.94	126	85	48
1935	25.42	128	108	19

[1] Average of class prices of milk testing 4 percent, premiums included, weighted according to sales in each class. Compiled by the Maryland and Virginia Milk Producers Association, Washington, D. C.

[2] The 1910–14 price was estimated as 19.8 cents per gallon. See: Peterson, H. G., HISTORICAL STUDY OF PRICES RECEIVED BY PRODUCERS OF FARM PRODUCTS IN VIRGINIA, 1801–1927, Va. Agr. Expt. Sta. Tech. Bull. 37, March 1931, Hale, R. F., PRICES PAID FOR MARYLAND FARM PRODUCTS, 1851–1927, Md. Agr. Exp. Sta. Bull. 321, September 1930.

[3] Calculated from the quantities of corn, wheat, hay, beef cattle, veal calves, hogs, lambs, and eggs sold in the Virginia portions of the milkshed; the quantities of corn, wheat, hay, beef cattle, veal calves, hogs, and eggs sold in the Maryland portions of the milkshed, both as estimated for 1930–34 from Cash Income to Farmers by the U. S. Department of Agriculture and from data in the Censuses of 1929 and 1934; and using prices received by farmers in the 2 States as reported by the Crop Reporting Board, U. S. Department of Agriculture.

[4] The difference between the 2 index numbers expressed as a percentage of the index of prices of farm products other than milk.

[6] No attempt is made to interpret relative price levels as measures of the effects either of classified price systems or of bargaining associations on milk prices. Such a measure is entirely apart from the purposes of the analyses presented here.

than prices of other farm products, on the same base, in each of the 12 years from 1924 to 1935. Differences between the two were greatest in the years 1931 to 1933, reaching 93 percent in 1932, but were relatively small in 1925 and 1928. Comparable data on market receipts from association members or from all shippers in the Washington market are not available for a length of time sufficient to allow a study of the effect of these price relationships upon production changes. Available data apply to the entire market during some of the recent years and only to association members in others.

Milk Prices in Baltimore, Md.

A similar analysis for the milkshed of the Baltimore market shows that the differences in prices have been somewhat less in Baltimore than in Washington. Milk prices were a little more flexible there than in Washington but much less flexible than prices of other farm products in the area around Baltimore. The index of milk prices in Baltimore during this period ranged from 12 percent in 1925 to 67 percent in 1932 above the index of other farm prices in the milkshed (table 13).

TABLE 13.—RELATIONSHIP BETWEEN FARM PRICES OF MILK AND OTHER SELECTED FARM PRODUCTS IN THE AREA AROUND BALTIMORE, MD., 1924 TO 1935

Year	Weighted average price per gallon [1] of milk f. o. b. city [2]	Index of milk price, 1910-14=100 [3]	Index of prices of other farm products, 1910-14=100 [4]	Percentage price of milk exceeds that of other farm products [5]
	Cents			*Percent*
1924	28.00	161	133	21
1925	30.43	169	151	12
1926	30.39	169	143	18
1927	31.55	175	136	29
1928	31.16	173	144	20
1929	31.33	174	143	22
1930	30.20	168	118	42
1931	24.73	137	89	55
1932	20.21	112	67	67
1933	18.08	110	77	43
1934	20.13	112	89	26
1935	21.78	121	104	16

[1] See table 12, footnote 1.
[2] Milk testing 4 percent, premiums included, compiled by the Maryland Cooperative Milk Producers, Baltimore, Md.
[3] The 1910-14 price was estimated as 18 cents per gallon. See: Hale R. F., PRICES PAID FOR MARYLAND FARM PRODUCTS, 1851-1927, Md. Agr. Expt. Sta. Bull. 321, September 1930.
[4] Calculated from the quantities of corn, wheat, hay, beef cattle, veal calves, hogs, and eggs sold in the milkshed as estimated from Cash Income Statements by the U. S. Department of Agriculture and from 1929 and 1934 Census data; and using prices received by farmers in the State of Maryland as reported by the Crop Reporting Board, U. S. Department of Agriculture.
[5] The difference between the 2 index numbers expressed as a percentage of the index of prices of farm products other than milk.

These price relationships are significant to the association in matters of price policy as they show at what point and to what extent differ-

ences in the two price levels will cause farmers to increase or decrease the size of their dairy enterprise, or to go into or leave dairying as a commercial farm venture. Available data on market receipts are such that a complete measure of the effects of price relationships on production changes is not possible. No data are available for the entire market for any length of time. The analysis then must be confined to market receipts from members of the association, thereby precluding any measure of the extent to which farmers enter or leave commercial dairying, because the number of active members of an association is probably influenced more by association policies and other factors than by price relationships. Market receipts from association members in Baltimore for the 12-year period 1924–35 are shown in table 14.

TABLE 14.—NUMBER OF ACTIVE SHIPPERS AND VOLUME OF MILK MARKETED, MARYLAND COOPERATIVE MILK PRODUCERS, BALTIMORE, MD., 1924 TO 1935 [1]

Year	Active shippers	Total milk marketed by association	Milk sold as other than class 1	Total milk per shipper	Excess over class 1 per shipper
	Number	*Gallons*	*Gallons*	*Gallons*	*Gallons*
1924	2,884	19,569,785	4,007,739	6,786	1,390
1925	3,055	20,740,462	2,870,415	6,789	940
1926	3,298	22,161,710	3,596,533	6,720	1,090
1927	3,527	24,235,930	5,363,914	6,872	1,561
1928	3,680	27,160,807	8,352,392	7,381	2,270
1929	3,573	26,882,587	8,115,380	7,524	2,271
1930	3,531	27,995,481	9,367,134	7,928	2,653
1931	3,632	27,554,826	10,021,265	7,587	2,759
1932	3,674	27,666,691	11,601,111	7,530	3,158
1933	3,563	24,772,100	9,294,132	6,953	2,609
1934	3,498	25,958,197	8,800,835	7,421	2,516
1935 [2]	3,380	24,831,255	8,339,897	7,347	2,467

[1] Data from Maryland Cooperative Milk Producers, Inc.
[2] Partially estimated.

The quantity of milk received from members over and above class 1 sales has been used as the measure of their response to changing price relationships. The association operates a base and surplus plan, sells milk to dealers at use-class prices, and the quantities sold in each class show up directly in prices paid producers. The class 1 price over this period has been substantially higher than other class prices, so that all producers have been given a real incentive to deliver at all times a quantity of milk at least equal to their allotted share of class 1 sales. For this 12-year period prices of class 1 milk averaged about 87 cents per 100 pounds above prices of milk of other classes and 25 cents per 100 pounds above average prices paid for all milk. The production responses of association members to changes in price relationships, then, would show up almost entirely in the quantity of milk received from them over and above class 1 sales.

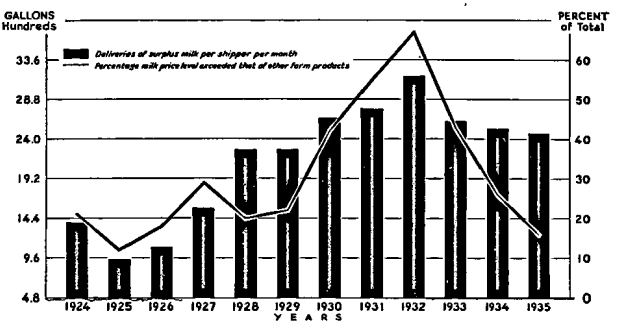


FIGURE 7.—PERCENTAGE MILK PRICES WERE ABOVE OTHER FARM PRICES AND THE PRODUCTION OF SURPLUS MILK, BALTIMORE, MD., MILKSHED 1924 TO 1935.

Changes in the price relationship between milk and other farm products in Baltimore were accompanied by changes in the same direction in surplus milk receipts in each of these years, except between 1927 and 1928.

The average association member in Baltimore has varied his shipments of milk, in excess of class 1 sales, from 940 gallons per year in 1925 to 3,158 gallons in 1932 (table 14). The percentage by which the milk-price level exceeded that of other farm products has also varied considerably; and in line with the tendency mentioned above, this percentage was lower in 1925 than in any other year and was highest in 1932. Yearly changes in these two factors are shown in figure 7. The apparent price advantage of milk over other farm products increased in 6 of the 12 years, and in each of these 6 years the shipments of milk in excess of class 1 sales also increased. There were 6 years when a decrease was shown in the price advantage of milk, and shipments per active member also decreased in five of these. This indicates a rather close degree of association between changes in the two factors.

The fact that surplus shipments increased between 1927 and 1928, while there was a decrease in the price advantage of milk, may have been due to the publicity attending the passage of a new health regulation with reference to the Baltimore cream market. Also, the increase in surplus shipments in 1931 might have been greater but for a vigorous campaign by the association to reduce surplus shipments of each member by 10 percent. The effects of association policies like the effects of weather or pasture conditions, are difficult to eliminate.

The close relationship between the price advantage of milk over other farm products and surplus shipments, however, warrants the

conclusion that in the Baltimore milkshed the price relationship is a factor affecting market receipts. Data from the last 3 years lend support to the theory that the producers are reluctant to decrease their volume of milk shipments as long as there remains any price advantage in favor of milk.

Effect of Price Relationships on Market Stability

Both the spread between fluid- and manufacturing-milk prices and the relationship between milk and other farm product prices are of practical significance to bargaining associations as the changes in supply conditions which inevitably result from unsound price structures create new problems or make existing problems much more serious. Developments during the last few years in fluid-milk markets generally, without reference to any particular market or association, may be cited as illustrations of these facts.

There was a marked increase in 1930, 1931, and 1932 in the spread between fluid-milk prices and manufacturing-milk prices. At the same time, milk prices were high in relation to prices of other farm products, particularly meat animals and grains. The result was an increase in the supply of milk seeking a sales outlet in fluid markets. Coming at the same time as a decrease in the fluid requirements of cities, this meant more surplus milk among both association members and outside groups.

Arranging for an equitable proration of surplus over the entire market, which is one of the most perplexing problems even in normal times, became much more difficult under these conditions. Membership problems multiplied through the discontent fostered among members seeking an enlarged outlet for market milk. The efforts of outside producers to sell in the market promoted price cutting, as did also the efforts of newly organized dealers to gain volume of sales.

Need for Information

Through its partial control of price policies and marketing programs the bargaining association should be able to prevent a recurrence of some of these conditions. It will not be able to do this, however, nor to meet intelligently the membership and operating difficulties which grow out of abnormal price relationships and unsettled market conditions unless the management and the members know the nature as well as the causes and effects of such conditions. In other words, it is essential to their effectiveness in bargaining that they know: (1) What economic conditions in the market are at all times; (2) what the results of existing prices and other conditions are likely to be; (3) what forces combined to bring about existing conditions; and (4) how the association may anticipate and modify the effects of these forces.

PRACTICES OF 15 ASSOCIATIONS IN MAINTAINING AND USING STATISTICAL DATA

THE basic needs of cooperative milk marketing associations for current economic information on the many phases of marketing operations have been recognized by the leaders of many milk cooperatives, with the result that rather extensive programs for the collection and analysis of market records and statistical data have been adopted by their associations. In fact, the administrative structure of practically all fluid-milk cooperatives provides for keeping market records and for the collection, analysis, and use of economic and statistical data to some extent. In a number of cases, however, the amount of work done has been very limited, or the work has progressed so slowly that the results have been disappointing.

Among the 15 associations with which contacts were made, there was little uniformity in this part of their administrative structure, wide differences existing in the types of records and data kept, in the completeness of the information recorded, and in the methods of using the data. This section of the present study describes the record-keeping practices of these associations, insofar as tabulations and summaries have been possible. It is not exhaustive to the extent of mentioning all of the records of each association and all of the variations in classifying material, but it is believed to include the most important.

Primary attention has been given to five considerations: (1) Nature of the records and data kept; (2) source of the basic material; (3) forms used; (4) uses and analyses made of the information; and (5) cost of the work. The last two considerations are general, affecting all types of records and are discussed in separate subsections. The exact nature of the record kept, the source of the material, and the method of keeping it will tend to be different as between records on production, sales, prices, and similar items. Therefore, they are discussed in the different subsections dealing respectively with the subjects to which the records apply.

Records Relating to Milk Production or Milk Supply

Volume of Milk Delivered

Production records, as those showing the amount of milk produced for sale by members are frequently called, are usually given first consideration in the record-keeping set-up of a milk cooperative. Usually these prove to be the most necessary and most useful of all market statistics. The practices of 15 associations in keeping records of this type are shown briefly in table 15. The data presented here show that, with one minor exception, each of these cooperatives has a

daily or a monthly record of the total volume of association milk reaching the market, of the volume going to each dealer, and of the volume coming from each association member. Approximately one-third keep records of daily shipments by each member-producer. The daily records of all but two or three associations, however, are available for analysis only at the end of each pay period. Only one-third have records of base and surplus deliveries of their individual members.

TABLE 15.—PRACTICES FOLLOWED BY 15 ASSOCIATIONS IN KEEPING RECORDS OF THE VOLUME OF MILK DELIVERED BY PRODUCERS, JANUARY 1936

Records of deliveries	Number of associations keeping—		
	Complete records	Incomplete records	No records
Total volume from association members	14	1	
From each member, monthly	14	1	
From each member, daily	6	3	6
Basic milk shipments from each member	5	[1] 6	[2] 4
Total volume from each nonmember		3	12
Total volume for the entire market	9	3	3
Association milk to each dealer	14	1	

[1] Most of these have records of each member's "operating base amount", and by inspection could determine deliveries in reference to this base. [2] No base and surplus plan.

None of the associations have complete records of the volume of milk coming from each nonmember shipper in the market. However, 9 of the 15 regularly record the volume from all nonmembers as a group, and 3 others are able to make a reasonably accurate estimate of the volume marketed by producers outside the cooperative.

Quality of the Milk Supply

A second aspect of the milk supply on which these associations are keeping records is the quality of the milk and the health department rating of the farms on which it is produced. Of the associations, 13 keep records of the butterfat tests of the milk of each member-shipper, and the other two have similar records for part of their members. Records of other quality factors, however, are kept by only 3 or 4 of the 15 associations (table 16).

TABLE 16.—PRACTICES FOLLOWED BY 15 ASSOCIATIONS IN KEEPING RECORDS PERTAINING TO THE QUALITY OF MILK DELIVERED BY MEMBERS, JANUARY 1936

Records kept of—	Number of associations with—		
	Complete records	Incomplete records	No records
Butterfat test of each member's milk	13	2	
Bacteria count of each member's milk	3		12
Grade A milk delivered by each member	4		[1] 11
Quality status of each member's farm and herd	4		[2] 11

[1] No such designation in 7 markets. [2] All of these know that minimum requirements are met.

Milk Transportation

The assembly and transportation of milk from farm to market is a third phase of milk marketing on which records relating to supply conditions are important. A summary of the extent to which such records are kept by these associations shows that about two-thirds of them have complete records on the milk coming in by direct truck from the farm; and most of the others have some information, although not complete records (table 17). Their records for the total milk supply and the milk of each member show the volume brought in by each truck each month or pay period, the members served by each route, and the hauling charges.

TABLE 17.—PRACTICES FOLLOWED BY 15 ASSOCIATIONS IN KEEPING RECORDS ON ASSEMBLY AND TRANSPORTATION, JANUARY 1936

Records kept of—	Number of associations keeping—			
	Complete records [1]	Incomplete records [2]	Noncontinuous records [3]	No records
Association milk shipped direct to city plants:				
Volume by each truck route	10	1	2	2
Members served by each truck route	10	3	2	----
Charge for trucking—all milk direct	11	----	3	1
Charge for direct trucking to each member	10	2	1	2
Association milk delivered to country plants or receiving stations: [4]				
Volume to each plant or station	9	1	----	1
By rail from plants or stations to city	7	2	2	1
Members served by each subsidiary truck route	5	2	2	2
Charge for trucking from the farm	6	2	3	----
Charge for plant or station handling	9	1	1	----
Charge for transporting to the city	6	1	3	----
Charge for assembly and transporting milk of each producer	6	2	3	----

[1] Meaning in many cases a record of changes which take place in zone deductions and allowances.
[2] For a part of the supply only.
[3] Largely through special studies or by annual contacts.
[4] 4 markets have no country plants or receiving stations.

In 11 markets, where a part of the milk supply moves through country plants or receiving stations (there are no country receiving stations in the milksheds of Hartford, Omaha, Des Moines, and Cincinnati), 9 of the associations have complete records of the volume received at each plant or station, and 9 have records of the charges made for handling the milk at these points. Not more than 6 of the 11, however, have complete information on the truck routes which bring milk from the farm into these plants or stations. A slightly larger proportion have records on the charge for moving the milk from the plants or stations into the city and on the volume of milk coming in by rail and trucks.

Sources of Records on the Milk Supply

The basic material or statistics from which records on the supply of milk are compiled come largely from the association itself or from

the dealers buying milk of association members. The associations in the Twin Cities and Cincinnati own and operate all of the physical facilities or have complete control of the receiving of the milk of all of their members, while those in Boston, New York, Detroit, Chicago, and Des Moines control the receiving of the milk from a part of their members through the operation of either city processing plants or receiving stations. To the extent of their control the statistics for the compilation of records on the volume of milk, quality of milk, and various aspects of its assembly and transportation are readily available at all times to these cooperatives.

Except where the association receives the milk in its own plants, dealers buying from the association furnish the cooperatives with reports which contain statistics for most of the association records pertaining to supply. The nature of the reports received from dealers is indicated in table 18. Arrangements for getting these reports regularly differ in various markets. In Washington, New York, the Twin Cities, Des Moines, Omaha, and to some extent in Chicago, Pittsburgh, and Detroit, the dealers are required to furnish basic information on volume received, quality characteristics, and charges for assembly and transportation, because the association calculates and actually makes the payments to each producer and to the haulers for the milk and for servcies rendered each month or pay period. In other cases the weight sheets, copies of payroll sheets (fig. 8), butterfat test, and quality reports are furnished either specifically for the record-keeping set-up or in accordance with contractual agreements with reference to auditing, checking weights and tests, or calculating pool prices.

TABLE 18.—MARKET REPORTS RECEIVED BY ASSOCIATIONS FROM MILK DEALERS IN 15 MILK MARKETS, JANUARY 1936

Report showing—	Associations receiving—			Question not applicable [1]	Report made to other agency
	Complete report	Incomplete report	No report		
Volume received from each producer	6	5	4	3	1
Butterfat test of each producer's milk	9		6	6	
Quality of each producers' milk	3		12	8	2
Complete milk producer's pay roll	3		12	6	1
Sales by classes of milk	4	1	10	3	4
Wholesale and retail sales	2		13	1	4
Sales by sizes of containers	1		14	1	1
Disposition of plant or station milk	3	2	10	4	4

[1] Not applicable because either the association performs that function itself, some other agency performs the function, or no such subdivision can be or is made in the market.

Other sources of statistics on production are the Federal market administrators, State milk-control boards, health departments, and independent agencies in the market. Market administrators receive

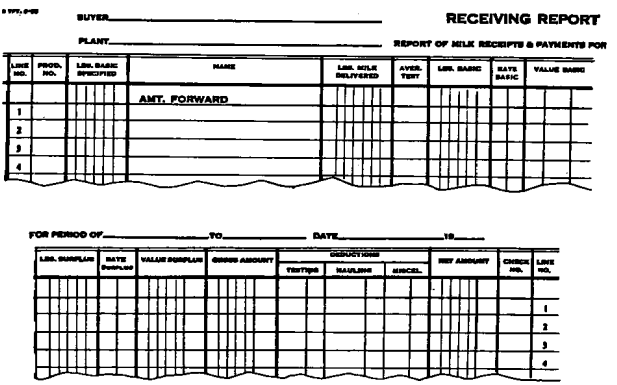


FIGURE 8.—PAY ROLL SHEET OR REPORT OF RECEIPTS AND PAYMENTS FROM WHICH MANY BARGAINING ASSOCIATIONS OBTAIN PRODUCER RECORDS.

This type of report may be supplemented by weight sheets showing daily deliveries and by test reports and quality reports to give the association more detailed records.

all reports from dealers in three or four of these markets and relay a part of it to the cooperatives. Health departments in a few markets furnish data to the association on the sanitary status of farms and herds, and on other quality factors. Independent butterfat-testing laboratories furnish reports to the associations in Washington and Baltimore.

Methods of Recording and Filing Supply Records

Methods of recording statistics on production or deliveries, particularly those for individual shippers, have been given a great deal of attention by all of these cooperatives. The result is that in all except one of the 15 association offices there is in use a card-index system, simple in some instances and relatively complicated in others, which carries the production records of the individual members (fig. 9). Practically all main cards for the individual producers show the dealer, plant or station, and truck route by which the member's milk is shipped, and the member's base, where a base and surplus plan is in operation; and, likewise, any changes as they occur. In some associations, cards of a different color are kept for new, inactive, or prospective members. Space on the cards is provided for a monthly or semimonthly total, and each provides spaces for records for a period ranging among the different associations from 1 to 8 years. All producer cards are usually filed according to a classified-index

system, with the main division indicating the dealers; the first subdivision showing the plants or stations; the next, the truck routes. They are filed alphabetically or by shipping numbers. In order to facilitate ready access to the data on the cards of the producers and

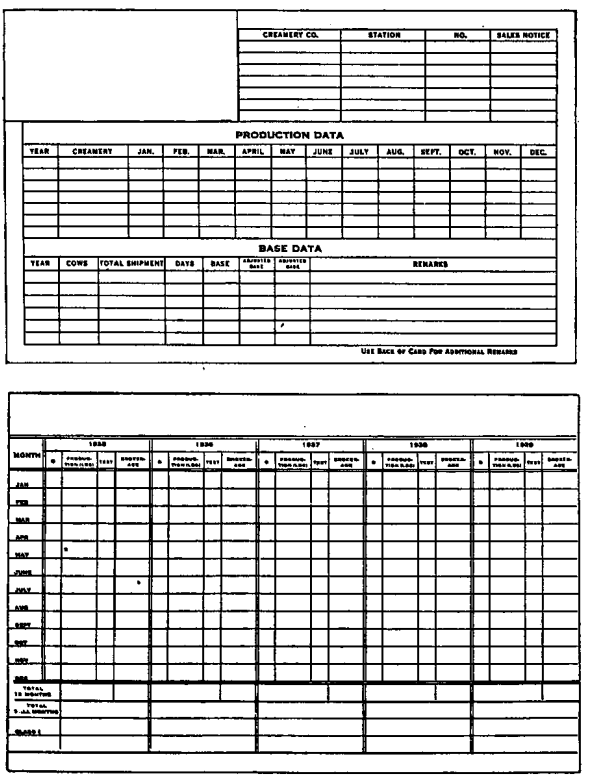


FIGURE 9.—TWO TYPES OF PRODUCTION RECORD CARD USED BY MILK BARGAINING ASSOCIATIONS.

Both sides of the production record cards are usually used, either to extend the period covered or to include supplementary data on finances, changes in ownership, base changes, cow numbers, and other factors.

FIGURE 10.—FILING CABINETS FOR PRODUCTION RECORDS IN THE PURE MILK ASSOCIATION, CHICAGO, ILL.

Records of the deliveries of individual members are posted on cards each month by employees of the association.

the subdivision cards filed under the different breakdowns of the classified index, a supplementary index in strict alphabetical order, or in the chronological order of the contract numbers, or both, are used (fig. 10).

Records of the butterfat-test and other quality characteristics of the milk of the individual members are also kept by one or two associations on the production-record card. The other associations keep these data on the report sheets originally bearing the information, or on a butterfat-record card similar to the production-record cards described above.

Few, if any, of the other records on supply create a serious question as far as filing or the form on which the information is kept are concerned, since they apply to much larger subunits of the markets, and consequently are fewer in number. Usually they are kept in special loose-leaf books or in the regular file jacket and cabinet.

RECORDS OF MARKET SALES

Statistics on sales of milk in the market are almost equally as necessary and valuable as production records in providing the cooperative with a complete picture of market conditions. Practices followed by the 15 associations in keeping records of market sales are shown in table 19. Sales are rather closely tied up with production or market receipts in the case of a product as highly perishable as fluid milk. Consequently, the associations which have records of the volume of milk shipped into the market usually have records also of the total volume of sales.

TABLE 19.—PRACTICES FOLLOWED BY 15 ASSOCIATIONS IN KEEPING RECORDS OF MARKET SALES, JANUARY 1936

Records of sales of —	Number of associations keeping —		
	Complete records	Incomplete records	No records
Milk of association members	14	1	
By individual dealers	14	1	
By classes of milk	11	3	1
Of milk and cream by wholesale and retail trade	2	2	11
Sizes of container	2	1	12
All milk in the market	9	[1] 3	3
By classes of milk	6	[1] 5	4
By individual dealers	1	[2] 12	2

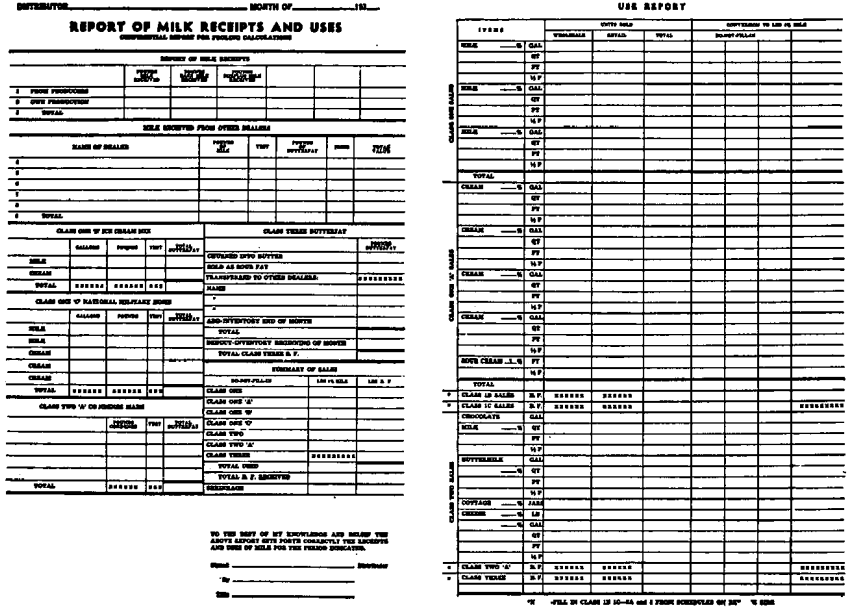
[1] Nonmember milk estimated.
[2] Only for dealers buying all their supply from the association.

All associations, with one exception, have records of the total volume of association milk sold and of the volume sold to each dealer. Of the 15, 11 keep records of the sales of this milk by classes, which usually means the use for which sold; such as fluid milk, fluid cream, ice cream, cheese or butter, depending on the definition of classes in each market. On the other hand, only two keep records of the relative volume of fluid milk and cream sold at wholesale and retail and according to size of the containers. The number keeping records on sales of milk produced by others than association members, thus allowing a record for the market as a whole, is proportionately less in each case. Incomplete records are kept and relatively accurate estimates made by most of those without complete data.

Sources of Material and Filing Methods for Records of Sales

The sources of the original statistics from which associations compile records on market sales are generally about the same as the sources for data on production. The association in Cincinnati and, to some extent the one in New York, are engaged in retail distribution and consequently have their own sales data. The associations in the Twin Cities and Des Moines sell to the dealers as milk only what the dealers use as fluid milk, and dispose of the rest of the milk supply through their own processing facilities. In Washington and Baltimore the associations charge the dealers one price for all milk they keep, but such milk is used by dealers for both fluid milk and fluid cream. This is a different procedure from that in the Twin Cities and Des Moines. In none of these six markets, except for that part of the supply which the association in New York turns over to dealers, is a sales report from dealers received.

In the other markets the dealers make monthly or semimonthly sales reports, usually verified by audit, to the association or to the



DISTRIBUTOR _____ MONTH OF _____ 193__

REPORT OF MILK RECEIPTS AND USES

CONFIDENTIAL REPORT FOR PURPOSE CALCULATING

RECEIPT OF MILK RECEIPTS

		TEST	POUNDS MILK	POUNDS BUTTERFAT		
1	FROM PRODUCERS					
2	OWN PRODUCTION					
3	TOTAL					

MILK RECEIVED FROM OTHER DEALERS

	NAME OF DEALER	POUNDS MILK	TEST	POUNDS BUTTERFAT	PRICE	VALUE
4						
5						
6						
7						
8						
9	TOTAL					

CLASS ONE 'F' ICE CREAM MIX

	GALLONS	POUNDS	TEST	TOTAL BUTTERFAT
MILK				
CREAM				
TOTAL	######	######	###	

CLASS ONE 'F' NATIONAL MILITARY HOMES

	GALLONS	POUNDS	TEST	TOTAL BUTTERFAT
MILK				
MILK				
CREAM				
CREAM				
CREAM				
TOTAL	######	######	###	

CLASS TWO 'A' OR HIGHER MARK

	TOTAL POUNDS	TEST	TOTAL BUTTERFAT
TOTAL	######	###	

CLASS THREE BUTTERFAT

	POUNDS BUTTERFAT
CHURNED INTO BUTTER	
SOLD AS SWEET FAT	
TRANSFERRED TO OTHER DEALERS	#########
MARK	
"	
"	
ADD INVENTORY BEGINNING OF MONTH	
TOTAL	
DEDUCT INVENTORY BEGINNING OF MONTH	
TOTAL CLASS THREE B. F.	

SUMMARY OF SALES

	NO-BUTT-FULLED	LBS PL MILK	LBS B. F.
CLASS ONE			
CLASS ONE 'A'			
CLASS ONE 'F'			
CLASS ONE 'F'			
CLASS TWO			
CLASS TWO 'A'			
CLASS THREE	#########		
TOTAL USED			
TOTAL B. F. RECEIVED			
SHORTAGE			

TO THE BEST OF MY KNOWLEDGE AND BELIEF THE ABOVE REPORT SETS FORTH CORRECTLY THE RECEIPTS AND USES OF MILK FOR THE PERIOD INDICATED.

Signed _____ Distributor

By _____

Title _____

USE REPORT

	ITEMS		UNITS SOLD			SHORTAGES TO LBS OF MILK			
			WHOLESALE	RETAIL	TOTAL	IN-PUT-FULLED			
CLASS ONE SALES	MILK ____%	GAL.							
		QT.							
		PT.							
		½ P.							
	MILK ____%	GAL.							
		QT.							
		PT.							
		½ P.							
	MILK ____%	GAL.							
		QT.							
		PT.							
		½ P.							
	TOTAL								
	CREAM ____%	GAL.							
		QT.							
		PT.							
		½ P.							
CLASS ONE 'A' SALES	CREAM ____%	GAL.							
		QT.							
		PT.							
		½ P.							
	CREAM ____%	GAL.							
		QT.							
		PT.							
		½ P.							
	SOUR CREAM .1 %	PT.							
		½ P.							
	TOTAL								
*	CLASS 1B SALES	B. F.	######	######					
*	CLASS 1C SALES	B. F.	######	######					#########
CLASS TWO SALES	CHOCOLATE	GAL.							
	MILK ____%	QT.							
		PT.							
		½ P.							
	BUTTERMILK	GAL.							
	____%	QT.							
		PT.							
		½ P.							
	COTTAGE ____%	JARS							
	CHEESE ____%	LB.							
	____%	GAL.							
		QT.							
		PT.							
		½ P.							
*	CLASS TWO 'A'	B. F.	######	######					#########
*	CLASS THREE	B. F.	######	######					#########

*If -FILL IN CLASS 1B 1C—1A and 2 FROM SCHEDULES ON REV * If SOME

FIGURE 11.—DETAILED TYPE OF REPORT FROM DEALERS SHOWING RECEIPTS AND SALES.

Very few bargaining associations receive reports from dealers which carry information on sales in this much detail.

Federal market administrators, who relay part of it to the cooperatives (table 18). The data for records of sales for the entire market are obtained from Federal market administrators or State milk control boards.

Before the existence of Federal licenses and control boards several of the purely bargaining cooperatives had agreements with dealers whereby association employees calculated the market pool prices and pool adjustments. Sales reports and receipts reports were required from all dealers buying association milk before this could be done, and the association then had the information on which to base its records.

Only one of the 15 associations gets from the dealers buying association milk a detailed report showing sales at wholesale and retail, and by size of container (fig. 11). The association in Cincinnati, which is engaged in retail distribution, has the information, of course; the same is true for a part of the supply of the association in New York, but none of the other 12 associations get any specific information of this type on milk and cream sales outlets.

There is no serious filing problem with reference to sales records. The common practice is to transfer the pertinent data to a form which permits of month-to-month comparisons and which can either be bound in a special book or kept in a regular file. One sheet is required for each dealer each month and another for all association milk or for the entire market. Where the reports are coming from an outside source, some of the associations have a special form on which the report is made and the original report filed.

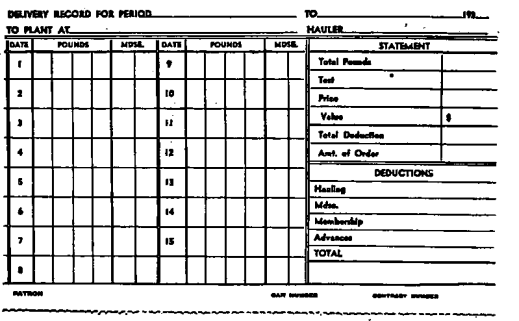
Records of Milk Prices in the Market

Since the cooperative milk marketing association concerns itself with the price of milk perhaps more than with any other single phase of the

Table 20.—Practices Followed by 15 Associations in Keeping Records of Milk Prices, January 1936

Records of prices paid—	Number of associations keeping—		
	Complete records	Incomplete records	No records
Association members:			
All milk of basic grade [1]	14	1	
Separate classes of milk bought by dealers	15		
Base milk and surplus milk	10	1	[2] 4
All milk	9	3	3
As premium for milk of special quality or grade	10		5
Nonmembers:			
By dealers	6	4	5
Individual shippers	1	7	7
Retail and wholesale market	13	2	

[1] Usually for grade-B milk of a given fat content f. o. b. city or some point in the milkshed.
[2] No base and surplus plan.



DELIVERY RECORD FOR PERIOD _____ TO _____ 19__

TO PLANT AT _____ HAULER _____

DATE	POUNDS	MDSE.	DATE	POUNDS	MDSE.
1			9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		
8					

PATRON _____ DAY NUMBER _____ CONTRACT NUMBER _____

STATEMENT	
Total Pounds	
Test	
Price	
Value	$
Total Deduction	
Amt. of Order	
DEDUCTIONS	
Hauling	
Mdse.	
Membership	
Advances	
TOTAL	

To _____

_____

_____

MONTH _____ 193__

QUOTA FOR	DAYS	LBS. @		$
CLASS I	% QUOTA	LBS. @	CWT.	
CLASS II	% QUOTA	LBS. @	CWT.	
EXCESS MILK		LBS. @	CWT.	
TOTAL PRODUCTION		LBS.		$
GROSS AMOUNT 4% B. F. BASIS, F.O.B.				
B. F. ADJUSTMENT:	% TEST, + OR —			
LESS: CARTAGE			CWT.	
CANS			CWT.	
C.M.P.A. DUES			CWT.	
MKT. GUAR. FUND			CWT.	
TOTAL			CWT.	
ADD: PREMIUMS				
OTHER CHARGES				
BALANCE DUE				

MILK STATEMENT

DAILY SHIPMENTS															
	1		8		15		22		29		Lbs. Shipped		Per Cwt.		
	2		9		16		23		30		" Base		@		
	3		10		17		24		31		" Surplus		@		
	4		11		18		25						TOTAL VALUE		
	5		12		19		26				Deduct: Hauling to Station				
	6		13		20		27				Bal. Butter				
	7		14		21		28								
Totals															
Test								Ave.			Check Herewith	No.			

FIGURE 12.—THREE TYPES OF STATEMENT ACCOMPANYING MILK CHECKS TO PRODUCERS.

Copies of these statements are kept on file by the association for record purposes.

market, every association had fairly complete records of prices. This was true, generally speaking, particularly of prices which dealers were paying f. o. b. city for each class of milk (table 20).

Practically all have records of retail and wholesale prices of milk and cream in the market area. Relatively few have complete records of price conditions with reference to nonmember milk. Those with incomplete records are generally familiar with changes taking place.

Sources of Price Information and Methods of Filing

As a rule every cooperative gets considerable price information through its own operations. Some of the associations by calculating the market pool prices each pay period, and others by going a step further and paying their members for the milk after collection for its sale from dealers, automatically obtain the statistics for records of class prices, weighted average prices, and base and surplus prices (fig. 12). In this connection, the associations in New York, Washington, the Twin Cities, Des Moines, Omaha, and Cincinnati are paying all their members for their milk, while those in Boston, Pittsburgh, Detroit, and Chicago pay a part of their members. In the other five markets, and to a large extent in the four last named, however, much of the price information comes either from the dealers or from the market administrators. The presence of the latter has greatly facilitated the keeping of records on nonmember milk prices.

In three of the nine markets where associations do not pay all members for their milk, the dealers furnish the associations with a copy of their producer pay-roll sheets, which carry price information as well as many statistics relating to receipts and sales (table 18). Practically all associations receive a periodic report from dealers showing retail and wholesale price schedules.

Price information is usually kept in a manner very similar to that described for records of market sales. The data for individual members are rarely transferred from the pay-roll sheets, which are usually bound in large books. Historical series of market-wide or class prices are kept in a less bulky way and conveniently available for use.

Economic Data on Factors Affecting Production and Demand

In addition to keeping records of actual changes in milk receipts and sales in the market, most of the associations indicated that a cooperative should keep economic data concerning the factors responsible for changes in supply and demand. This is necessary if the program of the cooperative is to be projected into the future or is to anticipate future conditions. Each cooperative stressed the value of such economic data, but relatively few of them were keeping or using data of this type in a comprehensive way.

Some causes of changes in production and sales have already been covered in discussions of market records. For example, the prices received by producers for milk will probably be one of the basic factors affecting production. In the same way, retail and wholesale prices will probably be important with reference to sales. Seasonal changes in production and sales in previous years are invaluable guides in both cases. Data on all these factors are obtained from the market records already discussed.

Factors Affecting Supply

About 80 percent of the associations either kept formal data or attempted to keep the management generally advised on prices of manufactured dairy products and feed and other farm items, pasture conditions, cow numbers, and weather conditions (table 21). Prices of manufactured dairy products is the only factor on which as many as half of them keep formal data. Only six keep formal data on feed prices. In fairness to a number of the cooperatives without formal data, it should be noted that for the smaller milksheds it is difficult to get reliable information at frequent or regular intervals—in fact, much more difficult than for the milkshed whose area covers an entire State or region.

TABLE 21.—PRACTICES FOLLOWED BY 15 ASSOCIATIONS IN KEEPING ECONOMIC DATA ON FACTORS ASSOCIATED WITH CHANGES IN VOLUME OF MILK DELIVERED, JANUARY 1936

Data for the milkshed area on—	Number of associations with—		
	Formal data	General information	No data
Levels of prices:			
Manufactured dairy products	11	2	2
Dairy cow feeds	6	3	6
Farm products other than milk	4	8	3
Changes:			
Pasture conditions	3	10	2
Weather conditions		[1] 13	2
Number of dairy cows	3	8	4
Production and use of milk	3	11	1

[1] Usually watched very closely during particular seasons.

Changes in Demand

Only about half of the associations make any attempt to keep economic data on factors usually associated with changes in demand or milk sales, except for keeping records of seasonal variations in sales and of changes in retail milk prices. In other words, only half of them keep any information on population, pay-rolls and employment, general business levels and price levels in their market area (table 22). Here again the cooperatives in smaller markets apparently find it either impractical or impossible to follow changes in these factors very closely.

TABLE 22.—PRACTICES FOLLOWED BY 15 ASSOCIATIONS IN KEEPING ECONOMIC DATA ON FACTORS ASSOCIATED WITH CHANGES IN MARKET SALES, JANUARY 1936

Data for the market area on levels of or changes in—	Number of associations with—		
	Formal data	General information	No data
Pay-rolls and employment	3	3	9
Population	4	4	7
Business activity and price levels	4	4	7
Prices of competitive products	3	8	4

General Economic Information

Each of the cooperatives has a file of information on conditions and developments in (1) other fluid-milk markets, particularly in the same area, and (2) the dairy industry as a whole with particular reference to manufactured dairy products. No tabulation of practices followed has been made here because, although all have some such data, there is no uniformity in the kind of information kept and no set procedure or formality in the method of keeping it. Changes in prices, production trends, marketing plans, and sales trends are included in the information on other milk markets. Data on production, storage holdings, imports and exports, trade output, and prices are maintained on other dairy products. Industry-wide information covers such subjects as the dairy outlook, general changes in the economic condition of dairying as an industry and as a farm enterprise, and legislative and other national developments affecting agriculture.

Sources of Information

The economic data kept by the cooperatives come from a number of sources. All except two associations have field men who make scheduled reports containing general information only, as a rule, on such local factors as production conditions, feed prices, and pasture conditions.

Those associations with information on factors affecting demand get part of it from Government reports, part from board of trade or chamber of commerce reports, and part from their own salesmen who have regular contacts with the market.

All except 1 of the 19 associations are members of the National Cooperative Milk Producers Federation, whose monthly price report and occasional service bulletins give them a variety of data on conditions in other milk markets, in all manufactured dairy products markets, in the industry as a whole, and on important shifts in the national dairy picture.

One of the associations is a member of a regional research council, five are members of a State federation of dairy cooperatives, three are members of federated cooperative sales agencies, and five are members of a sectional dairy-conference group. From each of these contacts they get much information—most of it of a general nature.

Milk cooperatives usually work closely with State and Federal departments of agriculture and the State colleges, and receive the reports which these agencies issue. Those of particular value to milk associations are the market news reports, crop and livestock estimates, the outlook reports, and special research studies (see p. 51).

Some milk associations have arranged for the collection of original economic data. Four have secured the cooperation of feed dealers in their milksheds and are getting feed price reports at regular intervals. Two associations in particular get questionnaires at stated intervals from a selected group of their producers with reference to feeding practices, herd changes, and production conditions.

Uses Made of the Records and Data Kept

Milk cooperatives with relatively complete and standarized sets of records and with data on economic conditions use their information in almost every activity and operation the association undertakes. For all organizations there appeared to be about five principal uses: (1) In the day-to-day operating routine of the cooperative, particularly for answering numerous questions raised by members; (2) preparing summaries of market conditions, charts, and tables at regular intervals for the use of employees, officers, and for membership meetings; (3) assembling and analyzing all facts available on particular problems as they arise and when particular decisions or policies have to be made; (4) forecasting supply and demand conditions in the area; and (5) preparing statements and analyses for use in public appeals for or public defense of price changes and other association programs and policies. Probably there are other uses not included in any of these classifications, but these are the most important.

Summaries of Market Conditions

Market summaries of receipts, sales, and prices, with historical comparisons and with selected charts, constitute one of the most important uses for market records and economic data. One type of summary is designed primarily to provide information for the education of the membership and is usually published in the house organ. Another is more detailed and is prepared for the use of officers, directors, and employees. The latter summary in about half of the associations is in the form of a loose-leaf "book of statistics", with a series of historical tables on receipts, sales, prices, and various other market

facts. New sheets go in each month to be replaced, in turn, after the total has been transferred to historical tables, by the next month's data. Charts on prices, sales, and production are published in house organs and are used at price conferences and membership meetings.

Special Economic Analyses

Analyses of special problems are made only occasionally, and, consequently, but few general statements can be made concerning the use of records for such studies. Eleven associations stated that some of the probable effects of changes in marketing plans were studied before the changes were made. Few have made cost-of-production studies or transportation and assembly studies, although there have been attempts to analyze some phases of these problems.

Forecasts

In efforts to forecast supply-and-demand conditions, practically all 15 associations are using certain records and data. They all follow seasonal trends in receipts and sales rather closely, several of them with charts and seasonal indices. Not more than half of them, however, are making any other calculations useful in forecasting. Only seven are computing "production per day per dairy", which they have found to be very valuable in market summaries and particularly in any type of forecasting. Of these associations, three compute such figures only at the end of the month; whereas four, getting the most value from "production per day per dairy", arrange to have the figures available once a week at least. Only three make a formal comparison of milk prices with other farm prices; only four compute grain-milk or grain-butterfat ratios regularly; and, as indicated above, about the same number have data on which to base any forecast of demand or sales, except for having data on retail prices and seasonal changes.

Public Statements

Within the last few years, when public attention has been focused on milk prices and State and Federal control or supervision has been exercised over certain milk-marketing functions, developments have made it necessary that the cooperatives have information to explain and defend their price policies and marketing programs. The statistical and economic phase of their job has involved detailed statements and interpretations of marketing conditions, historical analyses of relationship between class prices and between producer, wholesale- and retail-price structures, and analyses of a variety of general issues. No attempt was made in this study to examine either the completeness or the exact nature of any of their statements.

Responsibility for and Cost of the Work

The work involved in keeping market records and economic data and in preparing them for use is usually done either in a special research and statistical department or by designated employees, who may be in several other departments. As as rule, the clerical work in posting records on the individual members' cards is divided among the employees of several departments—production, membership, laboratory—while the analytical work is concentrated in a small department or in one employee. In some of the bargaining associations, operating no physical facilities, practically all office employees appear to be involved in one way or another in this work. In the smaller associations, and those with relatively few office employees, all work is done by one or two employees, each of whom has other duties. A complete lack of centralization of any of the work or responsibility was noted in only one or two associations.

With the work spread over different departments and among several employees as their part-time duties, it was almost impossible to determine how much any of these associations are spending on research and statistical work. The cooperatives generally considered the costs of records and research and statistical work as a general overhead expense, few of them making separate accountings of the exact cost. In the associations, however, where accounts of this item were kept separately, the costs amounted to about 10 percent of the total association costs. This percentage tended to decrease as the association assumed responsibility for performing more of the marketing functions, although the actual amount of record keeping, research and analytical work done, and the actual cost tended to increase.

FACTORS AFFECTING THE COMPILATION AND USE OF RECORDS AND DATA BY COOPERATIVES

EXAMINATION of the record-keeping and statistical practices evolved by some of the oldest and largest cooperative milk marketing associations has demonstrated rather conclusively that there can be no one composite answer to the question of what records, and data should be kept, or how they should be used. The extremely wide differences in local conditions under which cooperative milk marketing associations operate—particularly differences in functions and services performed, in association-dealer relationships, in the geographical size and political boundaries of milksheds (see fig. 1)—make it inadvisable to attempt any recommendations for a complete set of standardized records for all associations. It is doubtful if any association would find them entirely practical.

The general objectives in keeping records, however, and the basic factors affecting the records associations should keep and the analyses

they should make are much the same. Consequently there are included in this section a number of practical considerations which it is believed will affect the practices of the individual cooperatives. Most of these are drawn from the experiences of the associations with which contacts were made.

Choice of Records and Data to be Kept

Need for information in carrying on current operations has been the most important guide in determining what records and data should be collected regularly. The operation of a base and surplus plan, for example, creates a constant demand for complete production records for individual shippers whether the cooperative is determining the bases or ratings of the members and is administering the plan, or the dealers alone, or the dealers and the association jointly do this. Such records are made necessary also by the association's study of changes in marketing plans and in working out base rules.

Fairly complete records of market receipts, sales, and prices by classes and by dealers are also in constant demand. They form the basis of market summaries and are invaluable for keeping the management and the membership informed on market conditions. They are necessary before the association can adequately plan its marketing program or bargaining procedure, and before it can answer intelligently the many questions which come up from day to day.

As the scope of operations of the association is broadened to include more of the marketing functions, this need for information tends to increase, and the number and variety of policies to be determined and questions to be answered tend to become greater. Detailed information on assembly and transportation, for example, and on other phases of the milk market, may be used less directly by the strictly bargaining association than by one operating country plants or processing surplus milk.

In determining its needs for statistical information the cooperative has to depend to some extent on predictions as to future developments. Problems may arise which create a demand for more detailed or different data than are necessary under normal conditions. For example, the quasi-public character of fluid-milk marketing gives rise to extraordinary needs for information. The problems connected with Federal and State milk-marketing regulation, for example, were not anticipated by many associations; and those with fairly complete records were in better position to meet the new problems.

The value of certain types of records and economic data may not be apparent until an historical series is available. Economic data on factors affecting production and sales often fall into this category,

since estimates and forecasts are generally made almost entirely on the basis of what happened under similar conditions in the past. Thus, it is necessary to have continuous records on a number of the factors for a period of time before the use and value of the data can be demonstrated.

The availability of the original statistical material has had an important influence upon record-keeping practices, particularly in the case of bargaining associations with little if any statistical data from their own operations, and of associations in the smaller markets. The association whose market and milkshed are relatively small often finds its difficult to get data on such factors as cow numbers, farm prices, population, pay rolls, and business levels—much more difficult than the one whose market is a large city and whose milkshed covers several counties, an entire State, or more. Difficulties are encountered in most markets in getting the material for records of certain types, notably those of market sales and of assembly and transportation, because of the confidential nature of some of the statistics. Consequently, some of the associations with which contacts were made were not keeping sales records because they felt that the value of the records was not great enough to offset the loss in goodwill which might be occasioned in getting them. Any limitations imposed by the source lower the value of the statistics. This must be taken into consideration when weighing the value against the cost of these records.

Another consideration which has influenced the practices of a number of associations in the last few years is the fact that other agencies in the market have the desired information already compiled and in many cases apparently are willing to make it available to the associations at any time. This has been the case in some markets under Federal or State control. As a matter of insurance against future needs, it would appear to be the better policy in the long run for the individual associations to compile the information regularly, rather than to let some other agency take over all of their responsibility in this respect.

There are undoubtedly limits beyond which the cooperative should not go in its selection of records and data to be kept, particularly with regard to the dairy industry as a whole and to manufactured dairy products. None of the associations included in this study, however, appeared to any noticeable extent, to keep too-complete records. Under present conditions, they probably do not keep as complete records as might be desirable.

Sources of Information

Especially for the strictly bargaining associations, the source from which statistical information may be obtained has a profound influ-

ence upon the completeness or accuracy of the record-keeping set-ups and is often the sole limiting factor to the keeping of many records. The cooperatives which had the least trouble in regularly compiling complete records are those which either get the reports for a service function, or which already have them as a result of their own operations. Probably, then, the most satisfactory arrangement is for the association, wherever possible, to perform or to closely supervise performance of any function which automatically gives it the operating reports from which the desired statistics can be compiled. The suggestion does not imply that all fluid-milk cooperatives should operate country plants or perform any other given marketing function.

Fluid-milk bargaining associations performing any one or several of the following functions are in an advantageous position to obtain accurate statistics: (1) Figuring the market-pool price each pay period; (2) taking title to the milk, selling it to dealers, receiving payment, and writing producers' checks and statements; (3) taking full control of administering the base and surplus plan or other marketing plans and of equalization or adjustment funds; (4) auditing dealers' sales and checking or auditing dealers' records of payments to producers; (5) checking weights and tests; and (6) supervising transportation through contracts with the haulers.

The second function mentioned, that of taking title to the milk, collecting for its sale to dealers, figuring the pool price, and writing the individual producers' checks, while it entails more work, usually offers a greater variety of complete records than the other functions. Taking full control of the administration of equalization pools or market adjustment funds also provides the association with a number of rather complete records.

It is doubtful if any milk cooperatives have decided or should decide to perform any of the service functions mentioned above solely because more adequate records can be kept as the result of the statistical material which will be made available. This result is usually secondary to the main objective of taking over these jobs; that is, to get a closer, more direct, and more frequent contact with members, and to improve the association's bargaining position.

If the bargaining association is not performing any of these functions, reliance must be placed upon the voluntary cooperation of dealers and other market agencies for the statistical reports desired. In addition, specific provision for reports is often made in the agreement between the cooperative and its buyers. There is an advantage in having contractual provisions of this kind for obtaining the reports, for it removes the getting of the statistics from the category of month-to-month jobs, and insures continuous records. In fact the associations in this study with the most inadequate records were those which

had no agreements with the dealers specifically calling for regular and detailed reports.

To the extent that the cooperative is performing any of the marketing functions which require physical handling of the milk, there is no problem as to sources of statistics for market records. If only one or two functions are performed, such as country handling or processing of only a small part of the supply, the considerations just discussed will apply to the balance of the milk supply.

Types of Analyses

From a practical point of view the purposes of the statistical analyses made by cooperatives are, first, to keep the management, board of directors, and membership contantly advised as to changes in economic conditions; and second, to present all of the facts available with reference to special problems as they arise (fig. 13).

For these purposes the cooperative will need at regular intervals the economic information furnished by summaries of market conditions and by forecasts or estimates of changes in receipts and sales. Market summaries are the foundation of a well-informed membership and management. Some type of advance estimate of production and of sales is important to all milk associations, particularly those with full supply contracts with dealers and those operating physical handling facilities.

The preparation of market summaries does not require a great deal of time provided adequate records are readily available. As the

Figure 13.—Meeting of Board of Directors of a Large Milk-Bargaining Association.

At such meetings where policies are determined, analyses of current problems are presented and discussed.

name implies, the summaries may consist mainly of a direct presentation of significant market facts for the current month with a measure of change over the preceding month and preceding year. The association in Boston has been issuing a "Monthly Letter on Dairy Conditions and Outlook" for more than 10 years. It is an excellent example of what may be done along the line of market summaries for employees, directors, field men, and local leaders among the membership. Its contents at the present time include:

1. A short statement on the general business situation.
2. A table showing class prices, average prices, and butter prices for the current month, previous month, and corresponding month of the previous year, supplemented by discussion.
3. A statement concerning the purchasing power of milk in pounds of grain for the current month, previous month, the same month last year; and a normal average for the month.
4. A statement of production trends, with tables showing production per-day per dairy this year, a year ago, and 2 years ago, both semimonthly and weekly.
5. A statement on total market receipts of milk and cream at Boston, with tabular comparisons.
6. A statement concerning milk price trends in New York, which is the adjacent market area.
7. A tabular comparison of fluid-milk prices and of retail quart prices for the current month this year and last year in 15 New England cities.
8. A table showing semimonthly wholesale cream prices this year, and 1, 2, and 3 years ago, with discussions.
9. A discussion of trends in the butter market, with a table on cold-storage holdings for the last 6 years.
10. Two tables, briefly discussed, on cost-of-production factors, the first showing changes in composite grain prices, hay prices, and labor wage rates; and the second showing retail prices of selected concentrate feeds.
11. A table showing changes in the relative price levels or the index numbers of prices of milk, butter, grain, hay, farm wages, general wholesale commodities, and of all other farm products.

It is important to emphasize that charts and diagrams for publication in house organs and for use at membership meetings should be direct and clear so that they may be understood by persons not familiar with statistical technique. Charts may include such information as historical series of total receipts and sales by classes, prices for milk and butterfat, variations in butterfat tests and in deliveries of basic milk.

Analyses of probable changes in production or sales are usually a little more difficult to make. Records of production per dairy per day on a daily, weekly, semimonthly, or monthly basis have been used by cooperatives as a practical foundation for short-range forecasting of changes in production. Changes in the cow numbers and prices, in other farm prices, and in cost-of-production factors, are useful as a practical basis for estimating longer-range trends.

With reference to forecasts and also to other types of statistical studies by the associations, there are two other considerations of which some mention should be made. The first is that completeness will not always be possible in many analyses, particularly those which attempt to measure the relationships between or the causes of changes in economic conditions in the milkshed. The second is that the cooperative should exercise discretion in the interpretation and use of statistical analyses, taking account both of their lack of completeness and of the confidential or controversial nature of the information divulged by them.

Many milk cooperatives are not able to make analyses which will determine accurately the many factors responsible for changes in market receipts and market sales, because they do not have the time or the money. They must depend upon Federal and State research agencies for the greater part of this type of information. Few, if any, are able to measure completely the dealer's spread or margin, because of lack of complete information. Most of the cooperatives, however, can measure the spread on separate units sold through stores and off retail wagons and will find uses for such information. Cost-of-production studies are subject to the same limitations, but the level of some of the separate costs such as feed and labor can be measured closely so as to give some indication of changes in the whole.

Information obtained from milk dealers as to their volume of sales and other details of their business is, in most cases, confidential, and should be made public only as a part of market totals or averages. A reputation before the public and within the membership for soundness and accuracy in matters pertaining to the economics of milk marketing will do much to increase the effectiveness of the organization. For these reasons discretion in the interpretation and use of analytical results is desirable.

LIST OF ORGANIZATIONS STUDIED [7]

Maryland Cooperative Milk Producers, Inc., Baltimore, Md.
New England Dairies, Inc., Boston, Mass.
Pure Milk Association, Chicago, Ill.
The Cooperative Pure Milk Association, Cincinnati, Ohio.
Des Moines Cooperative Dairy Marketing Association, Inc., Des Moines, Iowa.
Michigan Milk Producers' Association, Detroit, Mich.
The Connecticut Milk Producers' Association, Hartford, Conn.
Falls Cities Cooperative Milk Producers Association, Louisville, Ky.
Dairymen's League Cooperative Association, Inc., New York, N. Y.
Nebraska-Iowa Non-Stock Cooperative Milk Association, Omaha, Nebr.
Inter-State Milk Producers' Association, Inc., Philadelphia, Pa.
Dairymen's Cooperative Sales Association, Pittsburgh, Pa.
Sanitary Milk Producers, Inc., St. Louis, Mo.
Twin City Milk Producers Association, St. Paul, Minn.
Maryland and Virginia Milk Producers' Association, Inc., Washington, D. C.

SOURCES OF CURRENT INFORMATION OF INTEREST TO COOPERATIVE MILK MARKETING ASSOCIATIONS

THE material listed here includes selected publications of agencies of the United States Government which carry economic data of interest to cooperative milk-marketing associations.[8]

United States Department of Agriculture.

CROPS AND MARKETS. Washington, D. C. Monthly. Contains data on prices, shipments, and market receipts of all farm products; charts on prices; special articles; and a summary of all market news reports, crop estimates, outlook reports, and intentions to plant and breed.

United States Department of Agriculture, Bureau of Agricultural Economics.

AGRICULTURAL SITUATION, THE. Washington, D. C. Monthly. Consists mainly of a summary of trends in production, movements, consumption, and prices of important farm products; and describes the economic picture of agriculture from month to month.

[7] Four other associations: The Milk Producers' Association of Summit County and Vicinity, Akron, Ohio; Scioto Valley Cooperative Milk Producers' Association, Inc., Columbus, Ohio; The Miami Valley Cooperative Milk Producers' Association, Dayton, Ohio; and Scioto County Cooperative Milk Producers' Association, Portsmouth, Ohio, were visited mainly in connection with another subject; and information in sufficient detail to include these 4 in the statistical tabulations used in this study was not obtained. The 15 associations listed above are included in tables and references are made to them by markets.

[8] Inquiries regarding any of these should be addressed to the agency issuing the report.

United States Department of Agriculture, Bureau of Agricultural Economics.

ANNUAL PRODUCTION REPORT OF MANUFACTURED DAIRY PRODUCTS. Washington, D. C. Issued in September. Contains tables showing production of each manufactured dairy product by months for the United States and by years for each State.

ANNUAL REVIEW OF AMERICAN CHEESE MARKETS. Washington, D. C. Issued in January. Mimeographed. Similar to review of butter market with data applying to American cheese.

DAIRY AND POULTRY MARKET STATISTICS. Washington, D. C. Issued in February. Mimeographed. Consists of summary tables covering dairy statistics published in the daily, weekly, and monthly reports.

DAILY MARKET REPORTS. New York, Chicago, Boston, Philadelphia, San Francisco, Los Angeles, and Portland. Issued each weekday. Mimeographed. Contains wholesale prices of butter, cheese, eggs, and dressed poultry; and data on market tones and conditions, receipts, and cold-storage movements and holdings.

DAIRY SITUATION, THE. Washington, D. C. Monthly. Mimeographed. Contains statistical analyses of data on production, trade output, and prices of dairy products with studies of special interest, and with comments on market trends and developments.

DOMESTIC DAIRY MARKET REVIEW. Washington, D. C. Monthly, about the 27th. Mimeographed. Contains data on production, trade output, and stocks of butter, cheese, and condensed milk; market comments on all dairy products with discussions of butter prices, foreign demand, and general developments.

FARM LABOR AND WAGES. Washington, D. C. Mimeographed. Issued on the 11th of January, April, July, and October. Contains data on wage rates, and the demand, supply, and general labor situation by States.

INCOME FROM FARM PRODUCTION IN THE UNITED STATES. Washington, D. C. Annually. Consists of data on farm values, gross income, and cash income to farmers in each State from each of 78 crops and 13 livestock items.

MARKETING ACTIVITIES. Washington, D. C. Weekly, on Wednesday. Mimeographed. A review of current service, research and related projects by State and Federal agencies in marketing and other economic fields.

MILK PRODUCTION ON THE FIRST OF THE MONTH. Washington, D. C. Monthly on the 12th. Mimeographed. Shows milk production per cow by States.

MILK PRODUCTION TRENDS. Washington, D. C. Quarterly with additional seasonal issues. Mimeographed. Contains data on production per cow, percent of milk cows on farms, grain being fed, pasture conditions, changes in number of cows, plans for herd changes, freshening data changes, feed costs, and similar items.

United States Department of Agriculture, Bureau of Agricultural Economics.

MONTHLY COLD STORAGE REPORT. Boston, New York, Philadelphia, Chicago, Portland, San Francisco, and Los Angeles. Monthly, about the 12th. Mimeographed. Contains data on holdings on the 1st of the month of butter, cheese, eggs, poultry, and other products.

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MONTHLY DRY MILK MARKET REPORT. Washington, D. C. Issued about the 27th. Mimeographed. Contains data on production, sales, wholesale prices, stocks, and market conditions of dry milk products and casein.

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MONTHLY ESTIMATE OF CREAMERY BUTTER AND AMERICAN CHEESE PRODUCTION. Washington, D. C. Monthly, about the 22nd. Mimeographed. Contains data on production trends by regions and in the leading States with comments and comparative summaries.

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MONTHLY EVAPORATED AND CONDENSED MILK MARKET REPORT. Washington, D. C. Monthly, about the 22nd. Mimeographed. Contains data on production, stocks, wholesale prices, prices to producers, and market conditions.

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MONTHLY EXPORT AND IMPORT REPORT. Washington, D. C., and San Francisco, Calif. Monthly, about the 27th. Mimeographed. Contains data on exports and imports of dairy and poultry products with summaries and comparisons.

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MONTHLY FLUID MILK MARKET REPORT. Washington, D. C. Monthly, about the 12th. Mimeographed. Contains tabular data on prevailing dealers' prices and wholesale and retail prices in selected cities, producer prices in selected cities, and summary tables by geographic divisions, with interpretations and comments.

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MONTHLY MILK AND CREAM MARKET REPORT. New York, Boston, and Philadelphia. Mimeographed. Consists of a summary of the data given in weekly reports.

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MONTHLY ORIGIN OF RECEIPTS BY STATES. New York, Chicago, Boston, Philadelphia, San Francisco, and Los Angeles. Mimeographed. Contains a tabular summary of receipts by States of butter, cheese, eggs, and dressed poultry.

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OLEOMARGARINE PRODUCTION. Washington, D. C. Monthly. Mimeographed. Shows the production of the different kinds of oleomargarine by months.

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PRICES OF FARM PRODUCTS RECEIVED BY FARMERS. Washington, D. C. Monthly, on the 29th. Mimeographed. Contains tables of prices received by farmers by States for 36 farm products on the 15th, with summary statements and tables of index numbers and comparisons, and tables showing by quarterly periods the prices paid by farmers for commodities bought.

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STATISTICAL SUPPLEMENT TO MILK PRODUCTION TRENDS. Washington, D. C. Issued occasionally. Mimeographed. Contains detailed tables summarizing by States the data in MILK PRODUCTION TRENDS.

United States Department of Agriculture, Bureau of Agricultural Economics.

WEEKLY BUTTER MARKET REVIEW. Chicago, Philadelphia, San Francisco, and Portland, on Friday; New York and Boston, on Saturday. Mimeographed. Contains market comments, a chart of daily prices, prices of future options, and monthly price comparisons and summaries.

WEEKLY FEED MARKET REVIEW. Washington, Chicago, Minneapolis, Kansas City, Portland, Oreg., San Francisco, and Los Angeles. Weekly. Mimeographed. Consists of a review of developments in supply and demand with a table of prices of basic feeds at the principal producing and distributing agencies.

WEEKLY MILK AND CREAM REPORT. Issued each Monday at New York, Philadelphia, and Boston; each Wednesday at Chicago. Mimeographed. Contains a tabulation of receipts of milk and cream (cream only at Chicago) and fresh condensed milk, by State of origin, by rail and by truck, with market comments and cream prices.

United States Department of Labor, Bureau of Labor Statistics.

EMPLOYMENT AND PAY ROLLS. Washington, D. C. Monthly, preceded by a preliminary mimeographed release. Shows changes in employment and pay rolls in selected industries, for all industries by States and regions, with some data for each of selected cities.

RETAIL PRICES. Washington, D. C. Monthly, with biweekly mimeographed supplements. Contains prices and indices of prices of selected products in each of the larger cities and for the United States.

WHOLESALE PRICES. Washington, D. C. Monthly, with weekly mimeographed supplements. Contains data on wholesale prices for selected products and groups of products for the United States.

United States Department of Commerce, Bureau of Foreign and Domestic Commerce

SURVEY OF CURRENT BUSINESS. Washington, D. C. Monthly. Contains a comprehensive factual and statistical review of current conditions and trends in business generally and in selected phases of business, including finance, trade, transportation, and industry. This is supplemented by a weekly report, equally comprehensive but in less detail.