



Cooperative Milk Marketing in Louisville

by Wm. C. Welden
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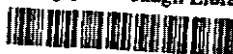
The Cooperative Research and Service Division conducts research studies and service activities relating to problems of management, organization, policies, merchandising, sales, costs, competition, and membership, arising in connection with the cooperative marketing of agricultural products and the cooperative purchase of farm supplies and services; publishes the results of such studies; confers and advises with officials of farmers' cooperative associations; and cooperates with educational agencies, cooperative associations and others in the dissemination of information relating to cooperative principles and practices.

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Cooperative
Milk Marketing
in Louisville and
other nearby cities

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FARM CREDIT ADMINISTRATION
Cooperative Research and Service Division

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Summary

IN THE States of Ohio, Indiana, Kentucky, and Tennessee, there were 46 milk cooperatives active at the close of the year 1937. These 46 associations and 2 others with headquarters outside the 4 States but having producer-members and outlets in the area, served all but 1 of the 20 metropolitan population centers, as well as many smaller markets. Some of the organizations operated exclusively in one of the smaller markets, but several were made up of minority groups in larger markets already served by a milk association.

These 48 associations had in 1936 about 33,000 members and sold slightly less than 1,550,000,000 pounds of milk. Approximately 55 percent of the fluid milk and fluid cream consumed in the 4 States in 1936, exclusive of that retailed by producers, was marketed cooperatively.

Types of milk associations in the area range from the small strictly bargaining organization with no fixed assets and a limited marketing program to the large association distributing milk at retail and operating with more than a million dollars in plants and equipment. Altogether, there were 30 strictly bargaining associations, 4 bargaining associations which take title to the milk and handle the payments to producers, 5 bargaining associations with surplus-manufacturing plants, and 7 milk-distributing associations operating in these States at the end of 1937. In addition, 6 cooperatives engaged primarily in butter production were distributing milk in about 20 smaller cities in the area.

Either a State or a Federal control program or both has been or is now in effect in the principal markets of 42 of the 46 associations in these States. Many of the newer organizations have never operated without control and are still in the process of working out their marketing programs. Among the older associations, there have been many changes in operating methods in recent years, with a rather general expansion of service activities, and a few changes in basic organizational structure.

In the Louisville market, the Falls Cities Cooperative Milk Producers' Association, which was selected for detailed study, has had to face many of the problems common to milk associations, especially

bargaining cooperatives. In this market of more than 400,000 population, with annual graded-milk receipts of about 100 million pounds from 1,350 producers, the Falls Cities association represents about 80 percent of the milk volume. Its program has been comprehensive, and, according to analyses made in the course of this study, successful to a marked degree. A new independent association has been active in the market since 1933.

The program followed by the Falls Cities association has been strictly that of a bargaining association. It has always been well-financed, however, and has steadily developed its service and laboratory work and its educational work among producers. Although there has been a control program in the market since 1934, there has been no decrease in the association's interest in or attention to price levels. The general promotion of milk sales for members is the most important part of its program. Second is the laboratory and service work, covering a wide variety of activities; and third is the work in membership relations.

As a sales agency, the Falls Cities association operates with exclusive or full-supply contracts with both producers and milk dealers. Members can sell only through the association but are guaranteed a market every day. They are assured of payment for the milk and receive the same prices per unit as other members. Contracting dealers agree to buy only association milk but are guaranteed adequate supplies at prices the same as those paid by other contracting dealers. With these relationships established, the rest of the association's job involves (1) advertising milk, (2) helping dealers with competitive problems, (3) trying to keep seasonal and annual supplies in line with demand, and (4) trying to maintain the highest price levels for milk which can be justified by market conditions.

Seasonal variations in receipts have always been a problem with the Falls Cities association. In 3 of its 7 years of experience there has been an extreme shortage of milk in the fall, and in 4 of the 7 years a heavy surplus in the summer. A base-and-surplus plan to encourage more uniform shipments was used from February 1932 through July 1934, and to some extent accomplished this purpose. Producer discontent forced its abandonment in 1934. Other conditions, including a new health ordinance in 1932 and a marked increase in the average production per dairy, helped to decrease seasonal variations. However, a number of periods of extreme shortage can be traced to adverse weather conditions.

The volume of surplus over fluid milk and cream sales, adjusted for normal seasonal variations, declined sharply from the early part of 1932 through 1934, but except for the drought period in 1936 increased steadily from 1935 until the early fall of 1937. The amount of rainfall, the price of milk in relation to the prices of feed and of

alternative farm products, and the price spread between market milk and manufacturing milk were factors which affected the volume of surplus. Weather conditions and feed supplies and prices were the most important factors. Market milk prices were higher than warranted by the supplies and prices of feed and the relative prices of other farm products in two of four periods of excessive receipts.

Association milk has been sold to dealers at class-use prices since May 1931. As compared with the average price for manufacturing milk in the area, the class I (fluid milk) price of the association averaged \$1.20 per 100 pounds higher, its class II (fluid cream) price 60 cents higher, and its class III (surplus) price 5 cents higher for the period of 80 months. Class I sales have averaged 57 percent of total receipts, class II averaged 12 percent, and class III averaged 31 percent.

Since the Falls Cities association was started, the blended price paid producers for milk of all classes in Louisville increased from \$1.43 in 1932 to \$2.25 per 100 pounds in 1937. From January 1933 through June 1937 there were only 4 months when the price was not as high or higher than the same month the year before. It is impossible to measure exactly the association's influence on these price levels, but it is significant that the share of producers in the price paid by consumers for fluid milk in Louisville increased from 45.2 percent (f. o. b. city) in 1932 to 51.6 percent of the total in 1937.

The Falls Cities association has developed a broad program of laboratory and service work, including checking of butterfat content and milk weights, help in solving producers' quality problems, cooperative purchasing of feed and supplies, partial control of milk hauling, financial assistance for herd improvement, and other services. Four or five men are employed to do this work.

Methods of making producer contacts and disseminating information to members include distribution of a monthly paper to all members; annual meetings attended by about one-fourth of the members; local meetings which are attended by about 55 percent of the members; field visits to about 40 percent of the farms each year; and visits to the association office by about half of the members at least once a year. Each member has an opportunity to vote (1) in the nomination of his district director every 3 years, (2) in the election of all directors at the annual meeting, and (3) in the election of local officers each year who make up the advisory council of the association.

Personal interviews with 277 milk producers shipping to Louisville—about 22 percent of the total located in all parts of the milkshed—showed the following general characteristics: Size of farm, 210 acres; size of herd, 18 cows; daily production, 40 gallons; distance to market, 26 miles; years shipping milk, 14; and cost of meeting the requirements of the health ordinance, \$402. More than 75 percent of the 227 Falls

Cities members in this group have been members of the association since it started.

More than 90 percent of the members interviewed felt that the Falls Cities association had improved market conditions and, on the whole, had been worthwhile to them. Greater bargaining strength, service work, and representation of producers' interests were the principal factors mentioned that had helped to improve conditions.

Although variations in local conditions imply that some of the association's methods would not have been so successful in other markets, both the management and the members of the Falls Cities Cooperative Milk Producers' Association feel that it has accomplished much. They recognize, however, that opportunities for service may be even greater in the future and that new problems may appear if the trend of prices ceases to be upward.

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Cooperative Milk Marketing in Louisville and other nearby cities

Nature and Purpose of Study

AS A part of the dairy marketing research program, the staff of the Cooperative Research and Service Division has felt that a description of the nature of the milk-marketing problems and the manner in which they have been met by cooperative associations operating under the conditions prevailing since 1925 would be helpful. A study of this kind has already been made of milk cooperatives in four markets in Ohio.¹ The present study is mainly a detailed analysis of the association in Louisville, Ky., but also includes some discussion of milk-marketing conditions and cooperative developments in the four States which comprise the fourth district of the Farm Credit Administration

Current problems among the milk cooperatives in this area, especially the bargaining associations, center around the need for developing a definite and comprehensive marketing program which is (1) flexible enough to allow adjustments for rapidly changing economic conditions, and (2) broad enough so that governmental control of prices will not affect too greatly the value of the association to its members. Thus, price negotiations and merchandising may be the major problems when there is no control, but a broader program is more desirable; and such matters as hauling, quality, surplus control, and general service work become more important when there is control. Membership relations are of prime importance in all cases.

NOTE.—Appreciation is due J. B. Roberts and H. B. Price of the Department of Markets and Rural Credits, University of Kentucky, who cooperated in planning and collecting the information for the portions of the study dealing with the Louisville market. The authors also wish to acknowledge gratefully the assistance given by the office of the Federal Market Administrator and the Falls Cities Cooperative Milk Producers' Association.

¹ Stitts, T. G., and Welden, Wm. C., *Milk Cooperatives in Four Ohio Markets*, F. C. A. Bull. 16, 73 pp. illus. 1937.

The Louisville milk market, and particularly the Falls Cities Co-operative Milk Producers' Association, were selected for detailed analysis in this study for a number of reasons. Chief among these was the belief that because of the representative character of the market conditions and the nature and success of the association's program, the results of the analyses should have a broad application to other cooperatives and be of wide interest to students of cooperative marketing. The specific request for such a study by the board of directors of the association, the opportunity to cooperate with the State agricultural experiment station,² and the availability of statistical information in the office of the association and the Federal Milk License Administrator greatly facilitated the study and influenced the selection.

In addition, the Cooperative Research and Service Division made contacts with a number of the other associations operating in these four States, and this information, together with that already available in the files of the division, formed the basis for a somewhat broader survey of all milk associations in that area. The study was made during 1937.

The purpose of the study has been, first, to present a general description of the development and problems of cooperative milk-marketing associations in the States of Ohio, Indiana, Kentucky, and Tennessee; and, second, to analyze, and as far as possible, to appraise the methods used by the Falls Cities Cooperative Milk Producers' Association in attempting to solve these problems, and to study in detail the various parts of its marketing program. The information developed in this way should be of assistance, first, to the association and its members in Louisville; second, to other associations in the area considering modifications or changes in their marketing programs; and, third, to the milk associations in other parts of the United States which are faced with similar problems.

In the study of the association's marketing program in Louisville, the procedure involved two approaches. The first was to analyze in detail all the statistical information available in the office of the association and in the office of the milk-market administrator of the Federal control program. The second was to visit personally approximately 22 percent of the producers who were active members of the association and to ask them about 100 questions regarding the various activities of their association. The replies to these questions formed the basis for an appraisal of members' attitudes toward the association.

The first section of this bulletin is devoted to a general description of milk-marketing conditions and the manner in which cooperative

² Slight differences between the statistical analyses in this report and that prepared by the University of Kentucky are due to minor differences in calculations rather than to differences in basic data.

milk marketing has developed in markets in the four States. This is followed by a more detailed discussion of the same type pertaining to the Louisville market and the Falls Cities association, tracing the development of its program. The next sections contain an analysis of the three general phases of the association's work to the extent permitted by available data; that is: (1) The sales program, (2) laboratory and service work, and (3) membership relations. This analysis shows the type of work done and the results achieved as measured by market records. The final section summarizes the attitudes of members as indicated by their answers in the interviews, giving their appraisal of the various types of activity undertaken by the association.

Cooperative Milk Marketing in Ohio, Indiana, Kentucky, and Tennessee

AT THE close of 1937, 46 cooperative milk associations were active in the four States making up the fourth district of the Farm Credit Administration—Ohio, Indiana, Kentucky, and Tennessee. Half of these, or 23 associations, were organized and began to operate since January 1, 1933; 16 were organized before 1925, and only 7 during the intervening period of 8 years. Reorganizations and important changes in marketing methods have been frequent since 1932 among many of these older milk cooperatives.

A number of perplexing problems have confronted the milk associations in these States. One of the most important has been to determine which marketing functions can best be performed or closely supervised by the cooperative and which functions should be left to other agencies. Lower price levels and the fact that State or Federal milk-control programs regulating prices and certain marketing practices have been in effect recently, have complicated the problems of both new and old associations. Frequently these questions are raised: "What should be the function of the milk cooperative under a control program?" "What services other than determination of prices should a forward-looking association of milk producers seek to perform?"

Functions which have become important from the milk association's point of view include control of milk hauling, control of marketing surplus milk³ either through plants operated by the association or through other channels, keeping adequate market records, and supervision of the butterfat testing work. Some associations have taken over the producers' pay roll. This ordinarily means collection from the sale of milk, computation of the net blended price, and the

³ Surplus milk may be defined as that part of the supply in excess of the requirements for fluid milk and cream.

distribution of individual returns to members. With price levels and other conditions changing rather rapidly, and to some extent being governed more by outside forces, many associations—including the Falls Cities Cooperative Milk Producers' Association in Louisville—have greatly expanded their so-called "service" programs. They have given increased attention to cooperative purchasing of supplies, field service, checking of weights and butterfat tests, and to quality problems. A few associations have changed the basic type of their organization, shifting from a strictly bargaining organization to an association with surplus plants, or they have gone into the milk-distributing business.

The presence of a control program in the market has to some extent lessened the confidence of the new associations seeking to develop definite operating methods or marketing programs. Many of these same conditions confronted the older associations in their early experience immediately after the World War, when price levels were changing rapidly and the Federal Milk Commission of the Food Administration was exercising some control over prices and marketing practices.⁴ At any rate, the problem of developing the type of program best suited to local conditions is still before many of these newly formed associations and must be met if the associations are to become permanent and successful business agents for their members.

The problems of promulgating sound price structures, and of building close relationships between the members and the association, have never been more important than during recent years. Both have been exceedingly difficult with pressure for lower prices from dealers and the public, and pressure for higher prices and lower marketing costs from members. Changes in economic conditions which affect prices take place rather quickly in the fluid-milk market, and with active competition in both buying and selling, the entire program of even the firmly established association is threatened unless its price policies are sound.

These problems are of current importance to the association in Louisville and to cooperatives in other cities in these States and elsewhere. The operations of State milk-control agencies in Ohio and Indiana and of Federal control programs in one or more markets in each of the four States named (p. 16) have had and are having a significant influence. The organization of many new associations, the types of programs they have adopted, and a number of changes in methods of operation among older associations can be attributed in a large measure to the control programs in effect. Other changes can be attributed more to changing price levels and business conditions. At the present time most of the new associations are still in

⁴ King, Clyde L., *The Price of Milk*. 236 pp. illus. Philadelphia, 1920. See pp. 104-120.

the process of working out their marketing programs. A number of the older associations are also making changes, experimenting with new types of cooperative activity in their markets, and are operating along considerably different lines from those followed in 1925 to 1930 or when they first started.

With these recent changes and the new associations fluid milk cooperatives functioning in this area at the close of 1937 presented a varied picture from the standpoint of size and type of organization. In many of the cities of this district milk associations have been active since the World War and the associations now operating represent all the types found in any part of the United States. Before discussing the development and the problems of these organizations, it should be helpful to describe some of the milk-marketing conditions found in their sales and production areas.

Urban Population

A marketing organization of fluid-milk producers has little opportunity to render real service unless there is a relatively heavy concentration of urban population. Otherwise, urban residents may have their own cows, producers very near the market may be able to supply all the milk needed, or the number of producers may be so small as to make the costs of operating an association excessive on a per capita basis. This is particularly true of the bargaining type of association, members of which deliver their milk in unprocessed form to private milk dealers.

Slightly more than half of the total population in the States of Ohio, Indiana, Kentucky, and Tennessee in 1930 were urban residents. Almost 6 million of the 15 million people in these States were living in the 55 cities having 25,000 or more population. (See table 1.) More than half of the urban population in the district and more than half of the residents of cities of 25,000 or more were in Ohio.

TABLE 1.—POPULATION OF OHIO, INDIANA, KENTUCKY, AND TENNESSEE IN 1930, ACCORDING TO URBAN AND RURAL AREAS AND ACCORDING TO SIZE OF CITIES

Area	Ohio	Indiana	Kentucky	Tennessee	Total
Cities of 100,000 or more.....	2,663,801	785,975	307,745	632,609	4,390,130
Cities of 25,000 to 100,000.....	734,984	474,215	203,347	25,080	1,437,606
Cities of 15,000 to 25,000.....	517,495	237,807	89,411	45,061	890,867
Cities of 5,000 to 15,000.....	350,025	172,871	112,481	99,184	744,481
Other urban areas.....	231,183	125,024	85,972	93,574	535,753
Total urban population.....	4,507,371	1,795,892	799,026	896,538	7,998,827
Rural population.....	2,139,326	1,442,611	1,816,563	1,720,018	7,117,518
Total population.....	6,646,697	3,238,503	2,615,589	2,616,556	15,116,345

Source of data: U. S. Department of Commerce, Bureau of the Census. Fifteenth Census of the United States, 1930. v. 1: Population, tables 9 and 10.

LOCATION OF
POPULATION CENTERS
IN THE FOURTH
DISTRICT OF THE
FARM CREDIT
ADMINISTRATION
1930

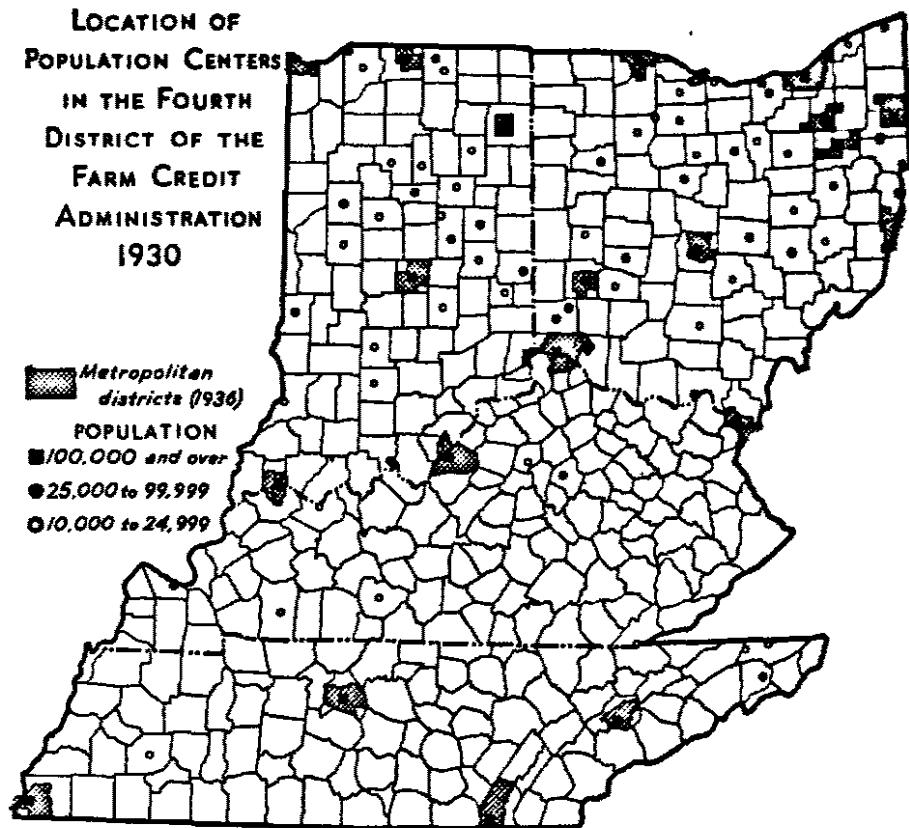


FIGURE 1.

In each State are several large urban districts and a number of smaller cities.

Of significance in milk marketing is the fact that many of the cities of 25,000 to 100,000 population are practically suburbs of larger cities and a definite part of metropolitan districts.⁵ There were 20 such metropolitan districts located partly or wholly in the four States in 1930. (See fig. 1.) Among these are all the 18 cities of 100,000 or more. They include as well 13 of the 36 cities with 25,000 to 100,000 population, 17 of the 60 cities with 10,000 to 25,000 population, and a great many smaller incorporated towns. In 1930 there were 43 separate markets having an aggregate population of 25,000 or more, although in 3 of them—Chicago, Wheeling, and Huntington-Ashland—the bulk of the population was outside the fourth district. There were also 43 separate markets with between 10,000 and 25,000 population each. For only 6 of the 46 associations in the area was the principal market a city of less than 25,000 and for only 3 was it a city of less than 10,000 population.

⁵ Defined in the 1930 Census as a contiguous area in which the population of no minor civil division is less than 150 per square mile and in which the aggregate population is 100,000 or more.

Production and Use of Milk

More than 11 billion pounds of milk is produced annually on the farms in the four States of Ohio, Indiana, Kentucky, and Tennessee. In 1934 cows were milked on 830,000 of the 1,008,000 farms in these States.⁶ Reports to the United States Department of Agriculture for the years 1935 and 1936 indicate that slightly more than a third of the milk produced was used in one form or another on the farm where produced, leaving about 65 percent of the total as the commercial supply. (See table 2.) Almost half of this commercial milk was sold at wholesale as whole milk, close to 40 percent of it was skimmed or separated on the farm and sold as butterfat in the form of cream, and the remainder was sold at retail by the producer as fluid milk or fluid cream.

Information received by the Department from processors of milk in these States indicates that about 65 percent of the commercial supply is made into various manufactured dairy products. Butter is by far the most important of these products, accounting for between 45 and 50 percent of the entire commercial supply. About 35 percent of the annual total commercial milk supply, or 2½ billion pounds, is used as fluid milk or fluid cream by the people not living on the farms where milk is produced. About one-third of this fluid supply was purchased directly from the producer in 1935 and 1936.

TABLE 2.—PRODUCTION, DISPOSITION, AND PRODUCT USE OF MILK IN OHIO, INDIANA, KENTUCKY, AND TENNESSEE, 1935 AND 1936

Item	1935	1936
	<i>Million pounds</i>	<i>Million pounds</i>
Production: Total milk produced on farms.....	11, 125	11, 117
Disposition:		
Used on farm where produced:		
Fed to calves.....	248	255
Made into farm butter.....	1, 641	1, 500
As whole milk or cream for food.....	1, 858	1, 818
Total.....	3, 747	3, 573
Sold in commercial channels:		
Retailled as fluid milk or cream.....	826	814
Skimmed and sold as butterfat.....	3, 091	2, 832
Wholesaled as whole milk.....	3, 450	3, 698
Total.....	7, 378	7, 544
Product use of commercial supply:		
Butter.....	3, 538	3, 321
Evaporated or condensed milk.....	661	737
Cheese.....	465	508
Ice cream.....	255	316
Dry milk products.....	13	10
Total manufactured products.....	4, 932	4, 892
Fluid milk or fluid cream.....	2, 446	2, 652

Source of data: U. S. Department of Agriculture, Bureau of Agricultural Economics, mimeographed releases: Milk Equivalent of Production of Manufactured Dairy Products, 1936; and Milk Production Utilization in the United States, 1934, 1935, and 1936.

⁶ U. S. Department of Commerce, Bureau of the Census, Census of Agriculture, 1935, v. 3, table 10.

It is significant that with only one or two exceptions there are a number of creameries or condenseries close to or in the supply areas for the larger fluid-milk markets. (See figs. 1 and 2.) This implies that prices for manufacturing milk are a competitive element in most city markets.

Development of Cooperative Milk Marketing

The first efforts in cooperative milk marketing in these States centered in northeastern Ohio and came before 1900. Before the turn of the century there had been two associations in Cleveland and two associations in Pittsburgh. Both of those in Pittsburgh included eastern Ohio producers. There were also three associations in Chicago before 1900,⁷ each of which probably included Indiana producers shipping to that market. These early associations, however, have long since gone out of business.

**LOCATION OF
PLANTS FOR
MANUFACTURING
BUTTER, CHEESE,
AND CONCENTRATED
MILK PRODUCTS
IN THE FOURTH
DISTRICT OF THE
FARM CREDIT
ADMINISTRATION
1936**

- Cheese plants
- Butter plants
- Concentrated milk plants

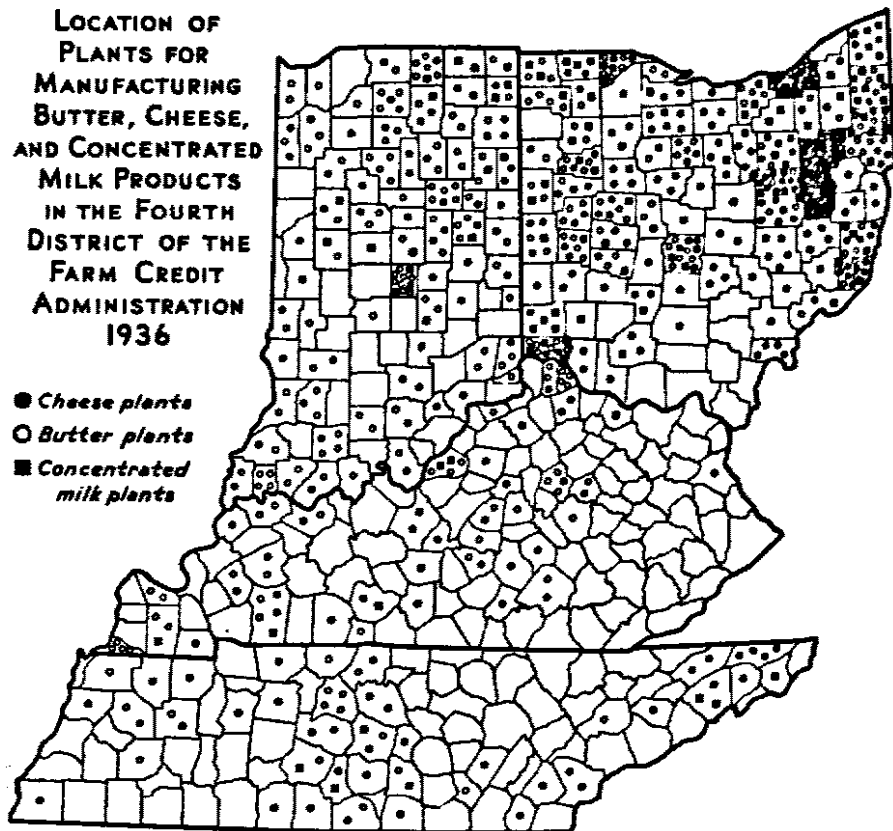


FIGURE 2.

More than 700 plants producing manufactured dairy products are located in these 4 States. Many of the plants are adjacent to city milk markets.

⁷ Metzger, H., *Cooperative Marketing of Fluid Milk*, U. S. Dept. Agr. Tech. Bull. 179, 91 pp., illus. 1908.

The organization periods for the 46 associations currently active in these States were as follows:

Organization period:	Number of associations
1915-19.....	4
1920-24.....	12
1925-29.....	5
1930-34.....	20
After 1934.....	5
Total.....	46

Four associations in Ohio were organized before 1920. During the next 5 years, many of the leaders of the early attempts at organization of fluid-milk producers were identified with the cooperative movement and 12 new associations were organized on a definite basis. Of this group, 8 were in Ohio and 4 in Indiana.

There was little organization activity in the late 1920's, but between 1930 and 1935, under the impetus of lower prices and control programs, there was greatly renewed interest in organization. Twenty of the present associations were formed during this period. Five others have been organized since January 1, 1935.

Altogether, of the 46 active milk associations with headquarters in the area at the end of 1937, only 16 had as much as 10 years' operating experience. Seven others had between 5 and 10 years' operating experience, and 23 had been in operation less than 5 years.

At least 10 other milk associations in the area were in questionable status as active organizations. Most of them were in Ohio and represented groups formed between 1933 and 1935 under State milk control. They have found it difficult to hold their sales outlets, keep their members, and provide adequate finances for a marketing program since the control law expired.⁴

Lack of complete information prevents any definite analysis of the extent to which previously organized milk cooperatives in any of these States may have been unsuccessful and so have gone out of business. In Ohio, where there were 25 definitely active associations at the end of 1937, available information indicates that at least 30 other milk associations were active at some time. In Indiana, where 14 milk associations were active at the end of 1937, there is some record of at least 5 others. There were 4 active associations in Kentucky in 1937 and indications of 2 others in previous years; and in Tennessee, where 3 associations were operating, there had been some form of organization in 4 or 5 other markets. Where definite information is available as to the causes of failure, it appears that either lack of proper financing or no real need for a milk association was the principal factor.

⁴ The Ohio milk control law was in effect from June 22, 1933, to July 1, 1935 (secs. 1080-1923, Ohio Code).

Types of Milk Associations in the Area

Cooperative milk-marketing associations usually have been classified in three groups: Strictly bargaining, bargaining and surplus-handling, and milk-distributing associations. Developments in the last few years have added a fourth type, between the first two—associations which take title to the milk and make returns to producers, but still do not operate any plant facilities. Also in recent years, cooperative creameries have become important in the fluid-milk industry in many markets through selling bottled milk and cream in their own dairy stores, from retail wagons, and to other milk dealers or stores. There are examples of each of these five types of operation in the four States under study. (See fig. 3.) The number of each type in each State is shown in table 3, together with the number of associations with headquarters and principal markets outside the district which operate in each of the States.

LOCATION OF THE HEADQUARTERS FOR VARIOUS TYPES OF MILK COOPERATIVES IN THE FOURTH DISTRICT OF THE FARM CREDIT ADMINISTRATION, DECEMBER 1937

COOPERATIVE MILK-MARKETING ASSOCIATIONS

- Bargaining only
- Surplus plant
- Retail distribution
- ▲ Title and Payroll

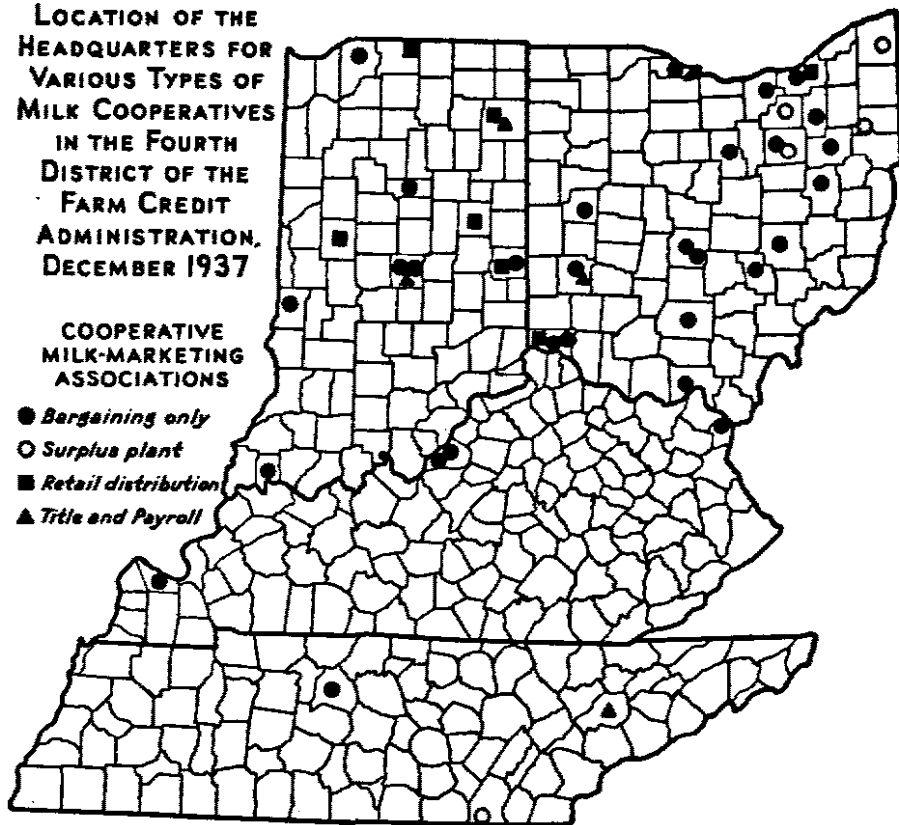


FIGURE 3.

Milk cooperatives are usually found in the larger cities. (See fig. 1.) More than half of the cooperatives in this district were in Ohio where urban population is heaviest.

TABLE 3.—NUMBER OF ACTIVE COOPERATIVE ASSOCIATIONS OF EACH TYPE MARKETING MILK IN THE FOURTH FARM CREDIT DISTRICT, DECEMBER 1937

Type of cooperative milk association	Ohio	Indiana	Kentucky	Tennessee	Total
With headquarters in the district:					
Strictly bargaining.....	18	7	4	1	30
Bargaining with title and pay roll.....	1	2		1	4
Bargaining with surplus plants.....	4			1	5
Distributing milk.....	2	5			7
Creameries marketing fluid milk.....	1	2		3	6
With headquarters outside the district.....	1	1			2

Source of data: Survey of agricultural cooperative associations in the United States in 1936 by the Cooperative Division, Farm Credit Administration; supplemented by data obtained by the authors directly.

It should be emphasized that the lines of distinction between these different types of milk associations cannot be hard and fast and are apt to be confusing if used in a rigid sense. The Miami Valley Cooperative Milk Producers Association, for example, engages in milk distribution in Troy and Greenville, Ohio; bargains and operates a butter plant in Dayton; and bargains in Springfield. It takes title to all the milk and distributes the returns to producers in all these markets. It is classified here as of the "title and pay roll" type.

Strictly Bargaining Associations

Almost two-thirds of the milk associations in these four States, including the Falls Cities association in Louisville, were of the strictly bargaining type. As a rule such associations do not take title to the milk, do not collect for its sale, own few if any fixed assets, and do not operate any facilities for handling milk. As far as the actual sales process is concerned, the strictly bargaining association operates much the same as a broker in arranging the terms and conditions of sale between two other parties. Many of these associations, however, exercise control or supervision over a number of the other marketing processes.

Among the 30 bargaining associations in this district, the types of marketing programs range all the way from the limited program of a small association of 165 members with no office and its entire program financed by a fee of \$1 per year per member, to the broad programs of others with over 1,000 members and relatively full control over such phases of the market as testing, hauling, advertising, auditing, field work, quality, and cooperative purchasing. The latter group, of which the Falls Cities association in Louisville is typical, often have a salaried personnel of 5 to 10, maintain an office and laboratory facilities, take complete charge of sampling and testing for butterfat, control milk hauling through contracts with the haulers, audit the dealers' sales records and calculate pool prices each pay period, and render a variety of special services to members. These associations usually operate on a commission or check-off of 2 to 4 cents per 100 pounds of

milk, and in a number of cases have accumulated cash reserves which permit them to guarantee milk payments and render emergency services of various kinds. The variety of services to members by strictly bargaining associations is steadily widening.

Bargaining Associations Which Take Title to Milk and Distribute Returns to Producers

Four of the milk associations in these four States were somewhat removed from the strictly bargaining class and yet did not own nor operate facilities for receiving, handling, or processing surplus milk. They were in Knoxville, Tenn.; Indianapolis, Ind.; and Dayton and Cleveland, Ohio. The removal of these associations from the strictly bargaining class involves, first, the fact that in their marketing agreements with members they take full title to the milk. In other bargaining associations, the agreement is usually an agency contract. Second, these associations having sold the milk distribute the returns to the producers. That is, having full title to the milk, they sell the milk to dealers instead of having the producers sell at terms arranged by the association. The association then collects for the milk, calculates the pool prices, and prepares checks for producers.

The marketing agreements which give the association full title to the milk also usually give the association relatively broad powers with reference to marketing channels or methods. In this way, it has potentially greater control over the marketing of surplus. In the case of the Indianapolis Dairymen's Cooperative, for example, the association is able to market all its surplus milk entirely independent of the city milk dealers—an arrangement which apparently helps to arrive at a satisfactory price for surplus milk and an equitable distribution of the surplus burden.

Milk associations which make returns to producers appear to have definite advantages in solving such problems as equitable pooling, keeping adequate records, informing the membership, and cooperative purchasing of supplies. At the same time, however, the responsibilities of the association are increased. More clerical work must be done. The dealers often are reluctant to give up contact with producers. The association must assume a number of credit risks.

Nevertheless, when the association collects from all dealers and pays the producers, it is evident that there will be less administrative difficulty in operating a market pool or a base and surplus plan, or in controlling the distribution of sales returns in any other way. At the same time, the association would be sure to have available statistical information on receipts, class sales, and other subjects to be used as the basis for analysis of market conditions.⁹ Membership relations are

⁹ Stitts, T. G., and Welden, Wm. C., *Economic Analysis of Bargaining Problems of Milk Cooperatives*, F. C. A. Circ. C-104, 64 pp. illus. 1937.

affected by the fact that when the pay check comes from the association, producers tend to think of the association as their marketing outlet, to attach less importance to choice of dealer, and also to visit the association office more often. In the purchasing programs which many milk marketing associations are undertaking, credit extension and collection are simplified when the association has charge of distributing the sales returns.

Bargaining Associations Which Manufacture Surplus Milk

Five of the forty-six milk associations bargained with proprietary milk dealers for the sale of milk for fluid purposes but disposed of the surplus by processing it into butter and other products in their own plants. Four of these were located in relatively small cities in north-eastern Ohio and sold their fluid milk in Cleveland; the other was in Chattanooga, Tenn.

In method of operation, type of contract, and other respects, these cooperatives are not greatly different from the bargaining associations that take title to the milk and handle the payments to producers. The financial requirements are somewhat larger because large investments in plant and equipment are required. The association which owns a surplus plant also faces the problem of developing efficient plant operations. Formal class pricing and the need for auditing dealers' sales records are often dispensed with in the surplus-handling association by the practice of selling milk for fluid milk and fluid cream at the same price, or by charging dealers one price for all whole milk sold to them. In the surplus-plant association, the cooperative almost always handles payments to producers, has a fairly high degree of control of hauling, testing, and other functions, and generally assumes more of the responsibilities involved in the marketing process.

Milk Distributing Associations

Representing the most complete stage in cooperative control of milk marketing are those associations which perform all the marketing functions in the distribution of milk from the farm to the consumer. There were 7 milk-distributing associations operating in these States in December 1937. Two were in large Ohio markets—Cleveland and Cincinnati—and 5 were in Indiana markets—Richmond, Muncie, South Bend, Fort Wayne, and Crawfordsville. One of these owned and operated a subsidiary distributing corporation in Louisville, and also one of the "title and pay roll" bargaining associations was engaged in retail distribution in two small markets in its supply area. In addition, there were at least 6 cooperative creamery organizations in the area, each distributing milk in one or more small markets, either through stores or retail delivery wagons. Altogether, therefore, milk

was being distributed either at retail or wholesale by dairy cooperatives in more than 30 markets in the area, about 20 of these being small markets served by a cooperative creamery.

The operation of a milk-distributing association is a complex and highly skilled business. Relatively heavy investments are required. Plant operations, sales methods, and other phases of the business must be modern and efficient if the association is to be successful. Membership relations are particularly important because capital contributions from producers are necessary and regular quantities of milk are needed. Distributing associations in these States have not always been successful, and many of them have had serious financial and managerial difficulties.

Scope and Methods of Operation

On the basis of reports received by the Cooperative Research and Service Division from most of these associations for the year 1936, it is estimated that approximately 33,000 producers in these 4 States were members of a cooperative milk association. The volume of milk marketed was close to 1,550,000,000 pounds, with a value to farmers delivered at city plants of approximately \$31,500,000, or close to \$2 per 100 pounds. These data are shown by types of associations in table 4. Included in the totals are estimates for the associations in Chicago and Pittsburgh of the number of members and the volume and value of milk received from these members in Indiana and Ohio respectively. It was decided not to attempt an estimate of this type, for the creameries selling milk, although the total volume of fluid milk sold by all of them was probably less than 10 million pounds in 1936.

According to the data in table 1, close to 2,600,000,000 pounds of milk was used as fluid milk and fluid cream in 1936 by the urban residents of the fourth Farm Credit district. About 800,000,000 pounds was retailed by producers, leaving 1,800,000,000 pounds as the approximate quantity sold by producers at wholesale. The active members of these cooperatives sold 1,550,000,000 pounds but probably only about 1,000,000,000 pounds of this was used as fluid milk and fluid cream. The remainder consisted of seasonal and daily surplus and was converted into butter, ice cream, and other products. On this basis, therefore, approximately 55 percent of the fluid milk and fluid cream consumed in the four States in 1936, exclusive of that retailed by producers, was marketed cooperatively.

The range in membership among the 46 associations in the area was from 41 to 2,300 active members, with the average slightly below 700. In volume of milk receipts the range was from less than 1 million to more than 100 million pounds, and in value of sales the range was from less than \$30,000 to over \$2,000,000 for the year. In the 4 States 18 milk associations each handled milk with a total sales value of more than \$500,000.

As compared with value of sales, the operating expenses of most of the milk associations were exceedingly low. Total operating expenses for the 46 associations in 1936 amounted to only \$2,442,800. Of this amount, only \$290,000 was accounted for by the 34 associations without plants—an average of less than \$10,000 per association. The expenses in these associations were paid out of income from "brokerages" or "check-offs" levied against each 100 pounds of milk marketed. Associations that distribute milk or manufacture the surplus may derive part of their income from such brokerage charges, but more often they deduct the expenses from gross sales receipts and pay the balance to producers. The rates of check-off for 29 bargaining associations without surplus plants are shown in the following tabulation:

Rate per 100 pounds:	Number of associations
1 cent.....	5
2 cents.....	5
3 cents.....	5
3½ cents.....	4
4 cents.....	5
5 cents.....	1
6 cents.....	1
1 percent of value.....	2
2 percent of value.....	1

For all associations of each type in the district, total operating expenses in 1936 averaged 2.6 cents per 100 pounds for strictly bargaining associations, 3.7 cents for bargaining associations which took title and distributed producers' returns, 19.4 cents for surplus-handling associations, and 123.2 cents for those in milk distribution. These figures apply to all milk handled and not merely to surplus milk in the case of surplus-handling associations or to fluid milk in the case of the distributing associations.

TABLE 4.—ESTIMATED NUMBER OF ACTIVE MEMBERS OF COOPERATIVE MILK ASSOCIATIONS, WITH VOLUME AND SALES VALUE OF MILK MARKETED, FOURTH DISTRICT OF THE FARM CREDIT ADMINISTRATION, 1936

Type of milk association	Active members	Milk delivered	Sales value f. o. b. city ¹
Headquarters in the district:	<i>Number</i>	<i>Pounds</i>	
Strictly bargaining.....	18,489	\$88,316,010	\$17,812,082
Bargaining with title and pay roll.....	4,339	160,875,780	3,501,227
Bargaining with surplus plant.....	1,312	67,921,750	1,490,291
Milk distribution.....	3,465	161,323,675	3,081,152
Headquarters outside district ²	5,500	280,000,000	5,500,000
Total.....	33,105	1,548,437,115	31,485,662

¹ Value to producers f. o. b. city plants; that is, delivered at the plant with no allowance made for delivery charges.

² Number of members in the district and volume and value of milk received from them, which does not include the total membership of these outside associations.

Source of data: Survey of agricultural cooperative associations in the United States in 1936, by the Cooperative Division, Farm Credit Administration.

TABLE 5.—AVERAGE AMOUNT AND NATURE OF EXPENDITURES BY 2 SELECTED MILK ASSOCIATIONS OF EACH TYPE, 1936

Nature of expenditure	Type of association and expenses per 100 pounds of milk received			
	Strictly bargaining	Bargaining with title and pay roll	Bargaining with surplus plants ¹	Milk distribution ²
	Cents	Cents	Cents	Cents
Management and direction.....	0.61	0.88	1.66	5.08
Office.....	.27	.90	1.48	7.42
Testing and laboratory.....	.27	1.46	(³)	(³)
Membership relations.....	.27	.68	1.00	1.28
Advertising.....	.18	.77	.01	2.41
Auditing and legal fees.....	.17	.15	.08	.61
Bad accounts.....	.11	.18	1.15	.88
Dues and donations.....	.12	.08	.16	.74
Plant and sales.....	.....	.....	5.22	85.58
Miscellaneous.....	.04	.13	.20	.08
Total.....	2.04	5.78	10.80	74.11

¹ This type of association may have plant and sales expenses only on a small proportion of its total volume.

² Expenses on fluid milk are much higher than this, but the average is lowered through the handling of surplus milk.

³ Included in plant and sales expenses.

Source of data: Financial statements of the associations.

For selected associations of each type, data in table 5 show the division of expenses among the different phases of their operations. These figures are not clearly representative of the various types in each case but indicate roughly the variations between types and the importance of different functions performed.

In each type of association there are wide variations from these averages, and it is misleading to infer that figures of this character for any association are typical. A strictly bargaining association, for example, may spend nothing or as much as 1 cent per 100 pounds for advertising, from 0 to 1 or 2 cents for testing and laboratory work, and very little or a great deal on maintaining an office, keeping records, and membership work. A cooperative engaged in milk distribution might have only 15 to 20 percent surplus over fluid sales or as much as 60 to 75 percent surplus, and as a result the average expense might range from \$2.50 to less than 75 cents per 100 pounds of milk received.

Public Control of Milk Marketing

Since about 1933, as indicated above, both State and Federal milk control agencies have had an important influence on cooperative milk associations. Of the 46 associations in these four States, 15 were operating in markets where control programs were in effect at the end of 1937, as follows:

	Number of associations
Federal control only.....	2
State control only.....	9
Federal and State control.....	4
No control.....	31
Total.....	46

In addition, all except 4 of the associations not operating in regulated markets had operated in connection with either State or Federal control or both at some time since 1933, and 4 of the 31 without control at the end of 1937 have been in process of being placed under Federal control since January 1, 1938. Altogether, then, only 4 of the 46 associations have had no operating experience with either a State or a Federal control agency. State control has been applied almost universally in Ohio and Indiana and Federal control over 2 of the 4 associations in Kentucky and 2 of the 3 in Tennessee.

Development of Cooperative Milk Marketing in Louisville

THERE are two milk associations in the Louisville market; the major cooperative has operated continuously since March 1931. A Federal control program has been in effect since June 1934. The major association is of the strictly bargaining type, as are almost two-thirds of the milk associations in the area covered by the study. Its program, however, has been fairly broad from the outset, and in a number of its lines of activity, the Falls Cities association has been outstandingly successful.

Market and Supply Area

Metropolitan Louisville had a population of 404,396 in 1930. This included Louisville proper with 307,745, and a number of smaller cities and civil divisions—chiefly New Albany and Jeffersonville, Ind.—with an aggregate population of close to 100,000. The latter cities are just across the Ohio River from Louisville and form an integral part of the milk sales area.

The milk supply of this market area is handled by approximately 30 dealers who purchase milk from producers and pasteurize it, and by 50 to 60 producer-distributors who sell raw milk. About 2.5 percent of the milk is handled by producer-distributors and 97.5 percent by the other dealers. The dealers who pasteurize include one corporation owned by a milk cooperative in Ohio,²⁸ and one corporation owned by National Dairies, Inc., of New York. The largest dealer who pasteurizes handles about 30 percent of the fluid-milk business in the city, and the 6 largest dealers handle about 65 percent of the milk.

A characteristic of the retail trade in fluid milk and fluid cream is that approximately 70 percent of the volume is sold to consumers through grocery stores, hotels, and restaurants. This is a very high proportion as compared with other markets, and together with the

²⁸ The cooperative in Ohio sold its Louisville business early in 1939.

fact that health regulations require "dated" caps on bottles and limit the elapsed time between receipt and sale, has a significant effect on the weekly surplus problem. Receipts on Friday must be fairly heavy to take care of the extra demand on Saturday for week-end consumption.

The graded-milk supply for this market amounts to slightly more than 100 million pounds per year. It comes from about 1,350 farms located in Kentucky and Indiana, and the supply area extends as far as 50 miles from the city of Louisville. (See fig. 4.) The milk of all except about 50 of these producers is delivered by trucks directly from the farm to dealers' city plants; the milk from the 50 producers is trucked first to a small receiving station operated by a large dealer on the outer edge of the milkshed.

Each of the farms supplying graded milk to Louisville is under inspection by the milk division of the city health department which enforces the United States public health standard ordinance. When this ordinance was introduced in 1931, there were close to 2,500 active shippers in the market, averaging about 100 pounds per day. Only about half of them made the changes in stables and equipment required of grade B milk shippers, but average shipments increased to more than 200 pounds per day. The former average of 100 pounds per day is similar to that of producers shipping to most of the other markets in these 4 States.

OUTER LIMITS
OF THE
LOUISVILLE
MILK-SUPPLY
AREA
1937

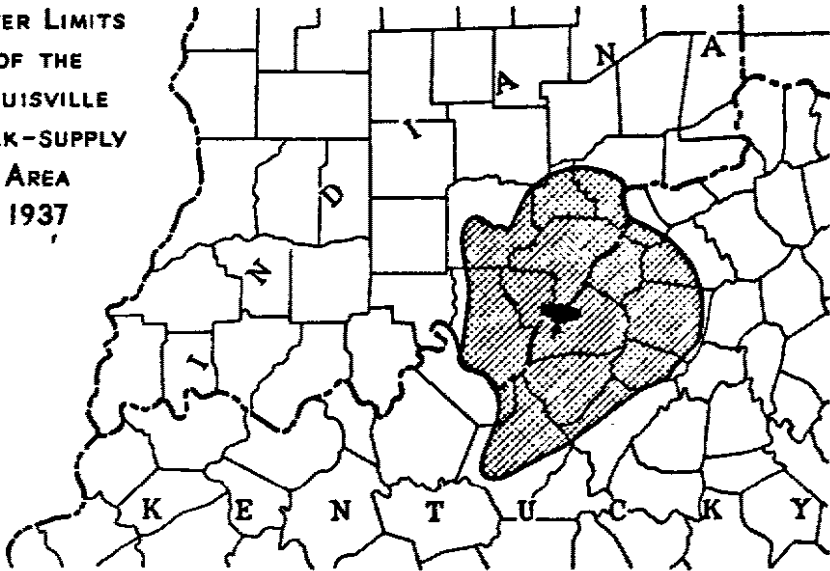


FIGURE 4.

Ten counties in Kentucky and six in southern Indiana are included in the Louisville milkshed.

TABLE 6.—APPROXIMATE ANNUAL PRODUCTION AND DISPOSITION OF MILK IN THE LOUISVILLE MILKSHED, BY STATES

Disposition	Estimated quantity utilized			Percentage of total production		
	Ken- tucky ¹	Indiana ²	Total	Ken- tucky ¹	Indiana ²	Total
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Sold as grade B milk in Louisville.....	77,700	22,300	100,000	33.2	17.6	27.7
Other whole milk sales.....	31,900	15,400	47,300	13.6	12.1	13.1
Sold as butterfat in cream.....	60,600	62,800	123,400	25.9	49.5	34.2
Used on the farm.....	63,700	26,300	90,000	27.3	20.8	25.0
Total production.....	233,900	126,800	360,700	100.0	100.0	100.0

¹ Includes Bullitt, Hardin, Henry, Jefferson, Meade, Nelson, Oldham, Shelby, Spenser, and Trimble Counties.

² Includes Clark, Floyd, Harrison, Jefferson, Scott, and Washington Counties.

Source of data: Estimates based on data from U. S. Department of Commerce, Bureau of the Census, Census of Agriculture, 1930 and 1935; data on sources of receipts from the market administrator.

The Louisville milkshed lies largely in the bluegrass region of the Ohio Valley, a high-grade farming section. Important farm enterprises other than dairying include producing tobacco, small grains, and truck crops and raising cattle, hogs, sheep, and other livestock. In many parts of the area burley tobacco and various livestock products rival milk as a source of cash income for farmers.

Types of dairy farming other than grade B milk production are also important in parts of the area. Estimates based on census data for 1929 and 1934 indicate that Louisville's grade B milk receipts represent only about 28 percent of the total quantity of milk produced in the 16 counties in the milkshed, and only about 37 percent of the milk in the area which enters commercial channels. (See table 6.) Sales of milk in the form of cream as butterfat are about 25 percent greater than the total volume of grade B milk sales; and sales by farmers of whole milk to condenseries or cheese factories, or to consumers outside the city are almost half as great as the receipts of grade B milk in Louisville. (See table 6.)

As shown in table 7, there are a number of manufacturing milk plants of one kind or another in the supply area for the Louisville market. Not only do many of the fluid-milk dealers in the market purchase ungraded milk and cream and manufacture a considerable volume of ice cream, butter, evaporated milk, and other products, but there are also 3 butter plants and 2 condenseries in the sales area. There are 16 other dairy plants in the milkshed and 18 dairy plants in counties closely adjacent to the outer limits of the milkshed. The supply areas for the latter group of plants undoubtedly overlap the Louisville milkshed to some extent.

A relatively strong competitive element is introduced into the price structure for grade B milk in Louisville because of these conditions.

TABLE 7.—NUMBER OF MILK PLANTS OF VARIOUS TYPES IN THE AREA AROUND LOUISVILLE, KY., 1936

Type of dairy plant ¹	Number of plants located in—			
	Sales area ²	Milkshed counties ³	Adjacent counties ⁴	Total
Fluid milk and cream.....	34	7	9	50
Butter.....	3	6	6	15
Cheese.....	0	3	3	6
Concentrated milk.....	2	0	0	2
Total.....	39	16	18	73

¹ Indicates only the principal dairy products handled or manufactured. Many of the fluid milk plants, for example, also make ice cream, butter, cheese, and condensed or evaporated milk; and the same is true for the other types of plants.

² Jefferson County, Ky., and Clark and Floyd Counties, Ind.

³ Other counties in the milkshed, see table 6 footnote.

⁴ Includes Crawford, Jackson, Jennings, Lawrence, and Orange Counties in Indiana; and Anderson, Breckenridge, Carroll, Franklin, Larus, and Washington Counties in Kentucky.

Source of data: Who's Who in the Butter, Cheese, and Milk Industries, 1936. American Creamery and Poultry Produce Review, v. 83 : 12, sec. 2.

The direct influence of this 170 million pounds of milk in the area moving regularly into manufactured dairy products, upon the price levels for the 100 million pounds of grade B milk is tempered by the requirements of the health ordinance, but it remains as probably the most important price-making force.

Falls Cities Cooperative Milk Producers' Association

The major cooperative in the Louisville milk market is the Falls Cities Cooperative Milk Producers' Association. It includes in its membership about 1,000 of the 1,300 active shippers (excluding producer-distributors). It was organized in 1929, incorporated in 1930, and began operating in March 1931. The only previous organization of milk producers in the market was known as Kentucky and Indiana Dairies, a relatively small organization for distributing milk, organized shortly after 1920 and taken over about 3 years later by a milk association in Cincinnati, Ohio. Preliminary educational work in the formation of the Falls Cities association was done by local farm leaders assisted by the State extension service, staff members of the University of Kentucky, and the Federal Farm Board.

The organization work was begun in March 1929 with a series of farmer meetings called by representatives of the Kentucky Farm Bureau Federation, the county agricultural agents, and some of the farm leaders interested in dairying. A number of the dairymen interested in the association during this formative period are still active as officers and directors.¹⁰ Although the new association had no official connection with the earlier distributing cooperative, a few of the leaders were prominently identified with both organizations.

¹⁰ Included among the leaders were W. B. Belknap, E. A. Thomas, Adolph Moser, R. L. Duncan, Clark Dellinger, and A. B. Sawyer.

The fact that almost 2 years elapsed between organization and effective operation of the association was due, in part, to the opposition of milk dealers in the market. The dealers refused to recognize the association as a representative of producers in the area until 70 percent of the active shippers had signed association marketing agreements. Several meetings were held in 1930, and the first election of officers was held in July of that year. In September 1930, a check of the milk dealers' records showed that the percentage of the producers belonging to the association was not high enough. In November 1930, a reduction in price stimulated new interest. Several association managers from other markets addressed meetings of producers and the results of the accompanying campaign for members gave the new association its required 70 percent of the market.

The first annual meeting of the Falls Cities Cooperative Milk Producers' Association was held in February 1931, and the following month the association began to operate on a definite basis. All the statistical records begin in May 1931 with the first report of the auditors on receipts from producers and dealers' sales by classes.

Reasons for Organizing

Before the association was formed conditions in the Louisville market were so unsatisfactory to producers that sentiment arose for an organization to represent them in the market. According to producers and association officials, the dissatisfaction centered around the degree of control exercised by dealers over practically all the marketing functions.

According to producers who were shipping to the market during this early period (table 31) dealers refused to buy the milk of some producers, particularly in the flush season, or bought their milk at surplus-milk or butter prices. Considerable quantities of milk were returned or refused during the flush period because of bad odor or flavor. Producers felt that the dealers never paid a price high enough to bring an adequate supply into the market during the short period, because they could get milk from the outside to cover shortages. Thus, they were able to reduce the price to extremely low levels during the flush season.

The larger dealers, except in periods of extreme shortages, bought milk from producers on what was called a "70-30" plan. Under this plan the dealers paid producers one price, such as \$2 per 100 pounds, for 70 percent of their deliveries; and paid surplus prices, such as \$1.25 per 100 pounds, for the other 30 percent. A number of the dealers paid 2 cents per gallon or more above the prevailing market price to selected producers because of the volume shipped, quality of the milk, or other reasons. A small group of producers, graded as A

by the State Health Department, received a still higher price. A producer who shipped less than 80 pounds per day on the average received the surplus-milk price for all his shipments. Dealers were completely in charge of arrangements for butterfat testing, and some producers felt that the dealers made "pencil-tests," that is, arbitrarily assigned a particular butterfat test to each producer month after month.

These conditions, together with the fact that the price level in the market was declining and was already low as compared with prices in other markets and prices for manufacturing milk, were the basic reasons for the organization of the Falls Cities association.

The Association's Program

The marketing program adopted by the Falls Cities association was determined by the organizational committee and was based on conditions which needed correction in the market, visits which were made to one or more markets in Indiana, and the counsel of a number of managers of other associations who were called into Louisville to meet with the committee. Briefly, the type of program adopted was that of a strictly bargaining association. The marketing agreements with producers did not give the association title to the milk, and apparently it was the census of opinion from the outset that only a bargaining program would be practical for the market.

The newly formed association began immediately to try to correct many of the market conditions which had stimulated interest in a producers' organization. Each member producer was provided with a market throughout the year at a price the same as all other members received for milk of the same quality delivered under the same conditions. The 80-pound daily average required to share in the top price was reduced to 40 pounds and later given up entirely. Class prices to dealers were inaugurated in May 1931, with dealers paying the same price for milk used in a particular class, and with provision for an audit of dealer sales and use reports. A program for checking butterfat tests was started in the summer of 1931, and early in 1932 the work to make the hauling system more efficient and reduce the trucking rate was started.

A base-rating plan, designed to promote a more uniform supply of milk throughout the year and to insure an adequate supply in all seasons, was started in February 1932. The city of Louisville adopted a new health ordinance in the summer of 1931, but the association was instrumental in having the effective date delayed until May 1932. It was also active in helping producers to plan changes in their stables and equipment, and in purchasing various supplies on a cooperative basis.

The association's work in the market has continued to develop along these lines and at the time of the study might have been outlined as follows:

A. Sales program:

1. Guarantee of a year-round market to all members.
2. Full-supply contracts with dealers.
3. Uniform class prices to dealers, with audited sales reports.
4. Equal sharing of surplus milk among cooperating dealers and all members.
5. Encouragement of less seasonal variation in production.
6. Sales promotion and advertising of milk.
7. Assistance to dealers on competitive problems.
8. Sound prices to prevent shortages and excessive surpluses.
9. Adequate reserves for emergencies.
10. Support of Federal and State milk control programs.
11. Encouragement of high quality in milk production.

B. Laboratory and service program:

1. Regular checking of butterfat content of each member's milk.
2. Special laboratory service to members on butterfat and quality problems.
3. Field service and assistance to producers on marketing and production problems.
4. Partial control of the hauling system to insure low costs and efficiency.
5. Manufacture and sale of disinfectant and fly spray.
6. Cooperative purchasing of feed, supplies, and equipment.
7. Assistance to members in times of emergency.
8. Financial support of dairy-herd-improvement associations.

C. Membership relations work:

1. Publication of a monthly magazine to be sent to all members.
2. Local and annual meetings of members.
3. Field visits to members' farms.
4. Encouragement of visits to the association office.

Nature of Operating Expenses

The data in table 8 show the chronological development of various phases of the Falls Cities' marketing program and indicate the amount of the annual expenditures for each type of activity. An initial membership fee of \$3 and a brokerage, or check-off, of 5 cents per 100 pounds of milk are the sources of revenue. This rate of brokerage was reduced to 4 cents per 100 pounds in 1937, but the association no longer directly contributes to the local dairy council for advertising as such a contribution is taken out of the pool price by the Market Administrator before any price is announced. Except in 1932 when

TABLE 8.—INCOME AND EXPENSES PER 100 POUNDS OF MILK, FALLS CITIES COOPERATIVE MILK PRODUCERS ASSOCIATION, 1932-38, YEAR ENDING JANUARY 31

Item	Cents per 100 pounds of milk							Average
	1932	1933	1934	1935	1936	1937	1938	
Operating income ¹	5.04	4.28	4.56	4.40	4.02	4.06	4.56	4.41
Expenditures:								
Management and direction.....	1.21	1.13	1.30	1.05	1.20	1.28	1.18	1.19
Office and overhead.....	.52	.62	.76	.79	.70	.99	.79	.73
Testing and laboratory.....	.34	.41	.60	.75	.72	.91	.74	.64
Advertising milk.....	.65	.80	.44	.65	.24	.00	.01	.30
Membership relations.....	.10	.19	.20	.24	.30	.41	.45	.28
Auditing and legal fees.....	.24	.43	.31	.09	.14	.12	.12	.22
Special service work.....	.00	.00	.00	.17	.51	.21	.51	.19
Dues and donations.....	.02	.04	.04	.13	.19	.05	.04	.06
Total.....	3.16	3.42	3.77	3.66	3.92	3.66	3.82	3.69
Reserve fund.....	1.88	.86	.79	.64	.10	.20	.74	.72

¹ Income from both dues and membership fees.

² Largely the work with hauling problems.

³ Largely the work with dairy-herd-improvement associations.

Source of data: Records of the association.

receipts from membership fees were heavy, the total operating income has been between 4 and 5 cents per 100 pounds each year.¹¹ Total expenses have always been below 4 cents, so that an addition has been made to the reserve fund each year.

The largest expense item has been for management and direction, totaling about 1.2 cents per 100 pounds each year. It includes the per diem and expenses of directors and officers, salaries of the manager and the secretary, and part of the general travel expenses. It has cost about three-quarters of a cent per 100 pounds to maintain the office; that is, for rent, communications, clerical salaries, taxes, depreciation, and miscellaneous expenses. About the same amount has been spent in recent years for salaries and supplies in connection with the testing and laboratory program.

The contribution to the dairy council for advertising ceased in 1935 although a small amount is still spent on special promotional campaigns. The amount spent in maintaining contacts with and supplying information to members has steadily increased. This work includes publication of the monthly paper, holding meetings, and considerable travel expense for officers and employees. The cost of auditing has declined since the market administrator's office took over the calculation of pool prices and became responsible for the correctness of sales and use reports. Special service work which has cost as much as one-half cent per 100 pounds in recent years has included pro-

¹¹ In the earlier years when the check-off was 5 cents, the dairymen shipping to the association dealer in Cincinnati were members of Falls Cities, but their milk was not pooled and the bulk of the brokerage on their milk went to the Cincinnati association.

motion of cow-testing associations, special field work on production and trucking problems, and a variety of other activities. Dues and donations have been a minor expense, even when contributions were made to the Kentucky Farm Bureau in 1935, 1936, and 1937.

The Independent Association

As a result of the growing dissatisfaction of some members with the base and surplus plan, which was inaugurated in February 1932, and dissatisfaction of certain dealers in the market with class prices to dealers and uniform prices to producers, a small association was formed in the Louisville market area in 1933. At the time of the study, it had about 150 members and about 10 percent of the milk purchased by pasteurizing dealers. All the members of the Independent Association are located in Kentucky, mostly in the two counties immediately east of Louisville.

The marketing program of this association has always been of a rather indefinite nature. It maintains no office, and although technically receiving the same dues as the Falls Cities, has fewer expenses and remits part of the dues in the form of higher prices. Of the 24 members of the Independent Association who were interviewed in the study, 18, or 75 percent, had been members of the Falls Cities association before joining the Independent. The appeal of this association to producers was originally based almost entirely on opposition to the base-and-surplus plan of the Falls Cities association and to the equal sharing by all producers and dealers of class I sales and the surplus burden. The new association also vigorously opposed the efforts to enact a State milk control law and has opposed the proposals for a marketing-agreement program in Louisville under the Federal Government's supervision.

Nonmember Producers

As in most all milk markets where cooperative associations are operating, there is a small group of producers in Louisville who do not belong to any association. This group numbers close to 150 producers who ship about 10 percent of the grade B milk supply. These producers are located in all parts of the milkshed, their milk is hauled on association trucks for the most part, and they sell to many of the same dealers buying from the Falls Cities association—despite the fact that the association has full-supply contracts with its dealers.

Federal Control Program

A Federal milk control program (license No. 60 of the Agricultural Adjustment Administration) has been in effect for the Louisville sales

area since June 1, 1934. It was amended on August 17, 1935. The class prices stipulated in the license were minimum, and actual prices have been higher since November 1934. The result was to concentrate the force of the license upon equal sharing of the surplus burden and the payment of uniform prices to producers. The enforcement of these provisions was not rigid after the first few months when some dealers refused to report their receipts and sales.

Despite these developments, the market administrator's office has continued as an important agency in the market, particularly in stabilizing producer-price levels and in acting partly as an arbitration agency between dealer groups and producer groups both equally anxious to prevent a collapse of the price structure and to keep the market on a stable basis.

The work of the administrator's office is financed by a fee of 1 cent per 100 pounds of milk reported. The office maintains complete records on a number of market factors—receipts, sales, active producers, demand conditions. It defrays the cost of auditing dealers' sales and use reports, and calculates pool prices to producers. The administrator announces the price to be paid producers for each pooling period. During the Louisville flood in 1937, this office handled the payments to producers, writing and mailing the checks. The deduction from returns to producers for dairy council advertising is made by the administrator and paid over to that agency.

Most of the dealers reporting to the administrator since January 1935 have been those buying largely from the Falls Cities association.

TABLE 9.—APPROXIMATE DISTRIBUTION OF ACTIVE SHIPPERS AND VOLUME OF RECEIPTS OF GRADE B MILK AMONG PRODUCER AND DEALER GROUPS, LOUISVILLE, KY., 1937

Portion of market	Active producers	Volume of milk receipts	Percentage of total milk receipts
	<i>Number</i>	<i>Pounds</i>	<i>Percent</i>
Federal license pool:			
Falls Cities Cooperative Milk Producers' Association.....	1,000	81,343,965	98.5
Independent Association.....	14	724,431	.8
Nonmembers.....	29	3,126,302	3.7
Total Federal pool.....	1,062	85,206,725	100.0
Producer groups in market:			
Falls Cities Cooperative Milk Producers' Association.....	1,000	81,343,965	79.2
Independent Association ¹	148	9,479,502	9.2
Nonmember shippers ¹	148	9,479,503	9.2
Producer-dealers ¹	52	2,525,000	2.4
Total market.....	1,348	102,827,960	100.0
Dealer groups in market:			
Federal pool dealers.....	1,062	85,206,725	82.9
Producer-dealers ¹	52	2,525,000	2.4
Other dealers ¹	244	15,096,235	14.7
Total.....	1,348	102,827,960	100.0

¹ Estimates by the Federal market administrator.

Source of data: Records of the Federal market administrator, Louisville, Ky.

(See table 9.) Altogether, the Federal pool included in 1937 about 83 percent of the milk in the market. More than 95 percent of this, or close to 80 percent of the total milk in the entire market, was delivered by members of the Falls Cities association. Some of the dealers buying largely from Falls Cities and operating under full-supply contracts with the association had small farms of their own, and also purchased milk from one or two Independent Association shippers and as many as five or six nonmember shippers.

Summary and Comparison of Market Conditions

In round numbers, the Falls Cities association represented 80 percent of the milk supply of the market; the Independent Association, 9 percent; nonmember shippers, 9 percent; and producer-distributors, 2 percent of the total. The producer-dealers and the dealers who buy from nonmembers and Independent Association members do not cooperate in the Federal control program, and do not share the surplus burden, although the prices they pay to producers have been within 1 or 2 percent of the price announced by the market administrator. Probably for most of these dealers outside the pool the percentage of their total receipts used or sold as fluid milk or fluid cream is higher than the average for the market.

This lack of a unified program in the Louisville market represents a situation found in a number of other markets in the area. For example, in Indianapolis, Ind., the market is under State control and the market administrator performs a number of functions, such as auditing, the calculation of pool prices, and the publication of a monthly paper. There are three associations active in the market: Two strictly bargaining associations formed rather recently and one title and pay roll association with nearly 10 years of experience.

In Cincinnati, where a Federal control program was inaugurated in January 1938, there are three milk cooperatives, two bargaining associations, and one association engaged in retail distribution. In this market, as well as in most others, there are a few producers who do not belong to any association. In Columbus, Ohio, there are two associations. In Fort Wayne, Ind., there are two associations with both Federal and State control. In the Cleveland market, there are five or six associations through which producers sell their milk. One association is engaged in retail distribution; three or four small cooperatives with surplus plants located in the Cleveland supply area sell milk to dealers in Cleveland; one bargaining association has its headquarters in Cleveland; and in addition to this, the association with headquarters in Pittsburgh, Pa., maintains a suboffice in Cleveland and has a sizable proportion of the active shippers in the market.

When the State milk control law for Ohio became effective in

July 1933, a majority of the active producers in many of the larger markets belonged to a relatively old association which had been in operation since about 1920. In a number of these markets, including Akron, Canton, Columbus, Dayton, and Toledo, new independent associations were formed, representing minority groups in the market for the purpose of presenting the views of these groups to the State control authority. These associations did not represent a substantial proportion of the market, but they did represent the organized voice of small groups. In practically every case, although they have not become strong operating units, and a number of them have now gone out of business altogether, the independent associations of this type have been the source of considerable irritation to the major associations.

In Louisville, for example, those producers who felt that they received unfair treatment from the Falls Cities association in any way were the first to join the Independent Association. In 1 or 2 years in particular, the Independent Association was apparently active in solicitation among the members of the Falls Cities association during their cancellation period. Largely because of this influence, the Falls Cities association completed in 1937 and 1938 a sign-up of its members on a new contract with provisions for cancellation entirely different from those included in its original agreements.

In the remaining portions of this study, which are devoted principally to an analysis and appraisal of the marketing program of the Falls Cities Cooperative Milk Producers' Association in Louisville, little attention is given to the activities of the Independent Association. One of the principal reasons for this is the difficulty which is encountered in any attempt to definitely analyze the marketing program which this or other independent associations tend to follow. Often their activities are dominated by a few men, and their program is either indefinite or follows closely that of the older association.

In deference to these new associations, however, it should be pointed out that their influence in some of the markets in the area has not been entirely to disrupt the established program for cooperative marketing of milk. The tendency of dealers buying from these associations to pay on a flat-price basis tends to focus the attention of the older associations on the soundness of their price structures. Also the existence of these new associations and the opportunities they afford for members of the older associations to transfer their milk to another marketing outlet have demonstrated to the older associations the importance of maintaining an effective educational program. These two elements in the market—sound price structure and the maintenance of satisfactory relationships with members—are two of the most important requisites of success in a bargaining association.

Sales Program of the Falls Cities Cooperative Milk Producers' Association

THE NATURE of the business enterprise in which a milk bargaining association is engaged makes it difficult to analyze precisely the work done or the degree of success. A major share of the work is directed toward improvement of market practices and price levels for milk, but the wide variety of agencies and economic forces which have a bearing on market stability and prices make it practically impossible to isolate and study separately the association's influence. The service activities are varied and often can be gauged only by their costs and the satisfaction which they give to members. Analysis of the balance sheet is not conclusive in any broad sense.

With these facts in view, an examination of the procedure followed by the Falls Cities association in selling milk was undertaken. Wherever possible, a statistical analysis was made of the association's work as a direct measure of the changes in marketing conditions which have taken place under the association's program.

The officers, employees, and members of the Falls Cities association consider it their major job to sell the largest quantity of milk on a basis that will give the greatest returns to producers. For convenience in discussion, the separate activities of the Falls Cities association in sales promotion may be divided between (a) those that have to do with giving good service to customers, promoting sales, and keeping the market on a steady basis, and (b) those that have to do with bargaining to get the most favorable sales terms for members. In connection with group (a) activities, such as the following, may be included: An agreement by the association to supply dealers with all the milk they request of standard quality for fluid milk and fluid cream sales, a contribution to various advertising and sales-promotion campaigns, the aid the association gives dealers in meeting competition of various kinds, the association's efforts to secure equal distribution of the surplus burden, and assistance in minimizing the quantity of surplus.

At the same time, in connection with group (b), the association sells only at class prices, insists on full-supply contracts from dealers, and on regular audits of dealers' sales. It tries to keep volume in line with consumers' demand, and to keep its bargaining strength at the highest point. The latter involves having a large share of the market under its control, being financially able to meet emergencies, and having marketing agreements with all members.

Sales Promotion and Advertising

Since the organization was formed, the Falls Cities association or its members have contributed to all general efforts in the market to increase the volume of milk and cream sales. This has involved paying 1 cent per 100 pounds of fluid milk and cream to the local dairy council, which does a variety of educational work among schools and clubs. This contribution amounted to between \$5,000 and \$6,000 annually. The association paid half the expense of a grocery-store program to increase milk sales. The association has apparently considered demand conditions—changes in income, trends in sales, competition from other foods, and factory employment in Louisville—in all its price negotiations.

Because both the association and the Federal control program have represented varying proportions of the market, it was necessary to study the records of a selected group of dealers to measure trends in sales. Continuous records were available for 13 dealers, representing about 80 percent of the association's fluid-milk market, for the years 1931-37. Their sales of class I (fluid milk both retail and wholesale) and class II (fluid cream, creamed buttermilk, cottage cheese, and

TABLE 10.—CLASS I AND CLASS II SALES OF 13 DEALERS, LOUISVILLE, KY., 1931-37

	Sales in millions of pounds ¹						
	1931	1932	1933	1934	1935	1936	1937
Class I milk:							
January.....		3.88	3.71	3.76	3.72	3.83	3.72
February.....		3.82	3.31	3.49	3.92	3.65	3.24
March.....		4.12	3.66	3.91	3.84	4.01	3.98
April.....		4.00	3.47	3.79	3.63	3.87	3.92
May.....	4.22	4.06	3.67	4.01	3.80	4.08	4.08
June.....	3.97	3.65	3.49	3.74	3.56	3.66	3.84
July.....	3.98	3.81	3.39	3.64	3.63	3.96	3.92
August.....	3.75	3.68	3.42	3.55	3.72	2.88	3.43
September.....	3.63	3.69	3.50	3.55	3.59	3.81	2.85
October.....	3.80	3.85	3.81	3.83	3.94	3.97	4.40
November.....	3.63	3.65	3.59	3.99	3.78	3.82	3.87
December.....	3.62	3.71	3.64	3.71	3.82	3.95	3.97
Total.....		45.91	42.66	44.87	44.56	46.02	46.26
Class II milk:							
January.....		1.07	.79	.60	.88	.88	.75
February.....		1.12	.66	.53	.62	.62	.57
March.....		1.06	.82	.73	.97	.98	.91
April.....		1.11	.86	.84	.97	1.03	.95
May.....	1.46	1.08	.92	1.00	1.02	1.11	1.07
June.....	1.32	.96	.87	.89	.87	.97	.96
July.....	1.05	.96	.83	.85	.85	.87	.90
August.....	1.05	.81	.78	.87	.83	.82	.89
September.....	.90	.76	.75	.87	.84	.82	.80
October.....	1.08	.86	.77	.90	.90	.86	.90
November.....	1.05	.81	.78	.82	.89	.86	.88
December.....	1.06	.85	.60	.90	.95	.85	.94
Total.....		11.45	9.40	9.90	10.79	10.81	10.62

¹ Class sales on a uniform-product basis, of the butterfat test used in these products.

Source of data: Records of the Falls Cities Association, Louisville, Ky.

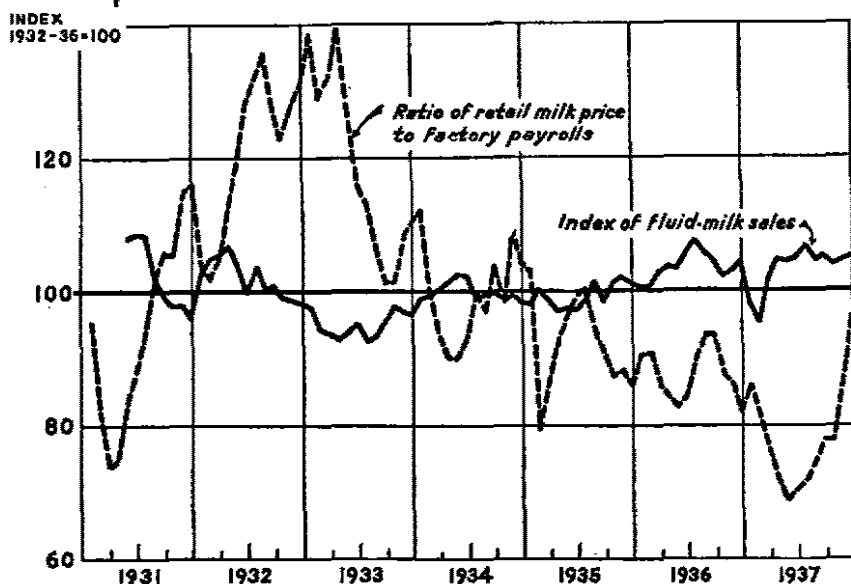


FIGURE 5.—CHANGES IN FLUID-MILK SALES AS RELATED TO CHANGES IN THE RATIO OF RETAIL-MILK PRICE TO FACTORY PAY ROLLS.

As a general rule, sales have been above average when the retail price was low in terms of this measure of consumer income.

flavored milks) apparently went down until 1933, reaching a low point in the summer of that year. Since 1933, the trend has been upward, with a few interruptions. (See table 10.) This was true for both class I and class II. Class II sales volume has been slightly less than one-fourth the volume of class I sales.

Undoubtedly many factors, some impossible to measure exactly, have caused these changes in volume of sales. It is logical to expect that variations in sales have been partly related to changes in retail prices for milk and changes in consumer incomes. Actual retail prices are available, of course, and the index of factory pay rolls is probably a fairly accurate measure of changes in income in an industrial center such as Louisville. A comparison of the retail price for milk and the factory pay rolls from 1931 through 1937 shows that although the actual retail price was lowest in 1932, 1933, and 1934 (see appendix A, table 44), it did not decrease to the same extent as factory pay rolls. On a comparative basis, it was still a high price. (See fig. 5.) Generally, although fluid milk sales, on the whole, changed comparatively little, total sales were fairly high when the retail price was low in relation to this measure of income, and were low when the comparative price was high.¹²

The normal seasonal variations in sales, on the basis of the data for the 13 dealers, show that the high point in daily average sales of fluid

¹² See appendix B, statistical note 1.

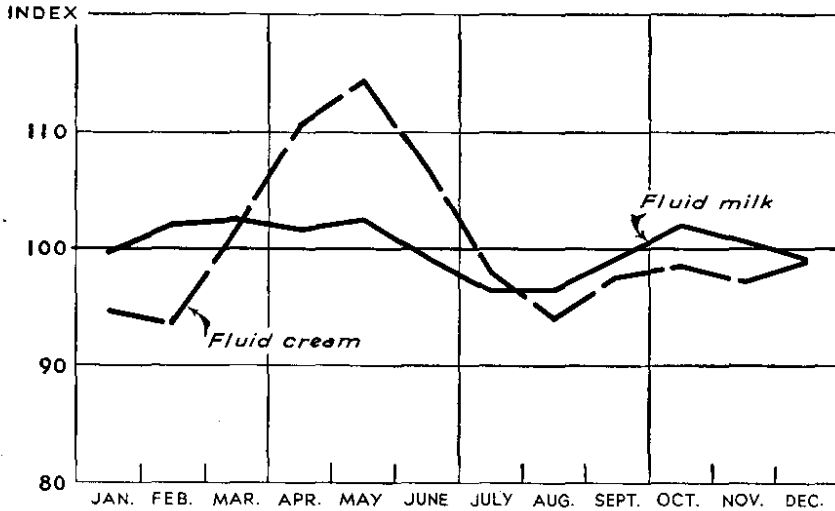


FIGURE 6.—INDEX OF SEASONAL VARIATIONS IN FLUID-MILK AND FLUID-CREAM SALES, LOUISVILLE, KY., 1931-37.

A seasonal range of about 6 percent in fluid-milk sales and of about 20 percent in fluid-cream sales has been characteristic of the Louisville milk market in recent years.

milk is reached in the spring and the low point in late summer and early fall. On the basis of an index for the period 1931-37, monthly deliveries ranged from 102.5 percent of the yearly average in March to 96.4 percent in July and August. (See fig. 6 and table 42.) Variations in class II sales are much wider; they ranged from 114.6 percent in May to 93.8 percent in February. Cream sales were also high in April and June, and low in August. The high point in both milk and cream sales is reached in flush production months, but sales of both milk and cream are also fairly high in October, November, and December, when production is lowest.

With a product such as fluid milk, where demand on the part of consumers appears to be on a fairly stable basis, there is always a question whether to lower prices as a means of encouraging higher consumption. If the price is lowered 10 percent and sales increase only 2 percent, the gross income is clearly much less than before. On the other hand, there may be danger that keeping the price on a high level would permanently lower consumers' purchases of fluid milk. There is no evidence, however, that this occurred in Louisville, although the retail price was not lowered to the same extent as consumer income was reduced during the early part of the depression.

Dealers' Competitive Problems

It should not be inferred from this discussion that the association has tried to exercise any direct control over the retail price of milk.

Its efforts have been toward stability and reasonableness in the price at which dealers purchase raw milk. The association has, however, been sympathetic to the problems of dealers, especially in their efforts to keep the volume of sales high. The general level of retail prices which dealers would probably have to charge has been given consideration in practically all price negotiations.

In at least two specific instances the association helped dealers with their competitive problems, in addition to making several changes in definitions of the various classes of milk, these changes being made, no doubt, partly for competitive purposes. The first of these instances involved the competition from producer-distributors in the Indiana part of the sales area. For a time in 1931 and continuously since 1935, the class I price to dealers for milk sold in Indiana has been from 20 to 46 cents per 100 pounds below the corresponding price in Louisville. The other instance involved the competition between association dealers and independent dealers for wholesale business in Louisville in 1935 and 1936. The association in 1935 paid half of the discounts which association dealers had to make to retain some of their business, and early in 1936 provided special class prices for milk sold in these channels.

Altogether this assistance to dealers involved discounts of \$60,250.51 as shown in table 11. Presumably, these discounts were made to enable association dealers to sell more milk as class I instead of losing volume to other dealers. The average spread between class I and class III prices for this period was \$1.20 per 100 pounds. At this rate, if this activity by the association resulted over the 6½-year period in keeping as much as 5,020,875 pounds from being used as class III instead of class I milk, the discounts were justified. The association management feels that the benefits from their efforts were much greater than this, since the focal points of the competition were on two important parts of the market. About 20 percent of the asso-

TABLE 11.—NATURE OF DISCOUNTS TO DEALERS BY THE FALLS CITIES COOPERATIVE MILK PRODUCERS ASSOCIATION, LOUISVILLE, KY., 1931 AND 1935-37

Year	Nature and amount of discount allowed		
	Lower class price in Indiana	Direct competitive discounts allowed	Special class price in Louisville
1931.....	\$7,470.13		
1935.....	9,880.80	\$11,077.91	
1936.....	14,644.44		\$3,913.43
1937.....	13,263.50		
Total.....	45,258.87	11,077.91	3,913.43

Source of data: Records of the association.

ciation's sales are in Indiana, and about 70 percent of its Louisville sales are wholesale business.

Equal Distribution of Surplus

Distribution of surplus milk—milk in excess of that used for sale as fluid milk or fluid cream—is important to milk dealers in meeting competition, as well as to the association in maintaining its membership strength. The primary effort of the association to bring about an equal distribution of surplus has been to get as many as possible of the dealers in the market to cooperate in pooling their purchases at the various class prices, and to pay producers the same price for milk of the same standard. All association dealers, and under the Federal license a few others, have cooperated in this pool; but it has never included the entire market.

Briefly, the pool operates as follows: (1) Each dealer is debited with his purchases of milk, at the various class prices and according to his audited sales and use reports; (2) the market administrator or the auditor calculates, on the basis of all dealers' class purchases and the levels of the various class prices, and announces a blended average or pool price; (3) each dealer pays his producers at this price and is credited with such payments; and (4) each dealer pays into or draws out of the "equalization fund" an amount sufficient to balance his account. In this way, each dealer in the pool pays the same price as other dealers for milk used in any given class, and all producers receive the same prices each month.

Pooling, however, does not affect the competition from noncooperating or independent dealers. These dealers may refuse to pool their milk because they have less surplus milk than other dealers and do not wish to carry their proportionate share of the surplus. Such dealers do not purchase at class prices, but buy directly from producers at a single price which is usually the same or a little higher than the "pool" price to producers. With a greater percentage of their sales in the fluid classes, these dealers have a competitive advantage in selling. If the advantage is large enough, they may be able to cut retail prices, but even a small advantage will allow small wholesale discounts.

The associations' attack on this problem has been to try to keep the percentage of surplus in the pool down to a minimum, and to give consideration to the pool price in arriving at the class I price. When the spread between the pool price and the class I price is extremely wide, the reason is either a large surplus, a wide spread between class I and class III, or both. The result is to give independent dealers a greater competitive advantage.

There is necessarily some spread between the pool price and the class I price because daily variations in sales and seasonal variations in

receipts, together with guaranteed markets to members and guaranteed supplies to dealers, make for a sizable surplus in the market; also, the spread between class I and surplus prices may need to be rather wide because of health regulations, hauling costs, and other limitations. Independent dealers, unless they are very small, are also forced to purchase some surplus milk to hold their producers and their sales outlets. They buy only the minimum, however; whereas, the pool dealers together purchase all that is produced by their shippers.

The spread between the association's pool price and its class I price in Louisville has been highest in the summer months when the seasonal surplus occurs and class III prices are lowest. (See table 12.) On an annual basis, it was highest in 1931 and again from August 1936 through August 1937. No measure is available, of course, as to how high such a spread could be without causing difficulty. It would seem, however, that anything above 60 or 65 cents would be in the danger zone. Anything above 45 or 50 cents would be dangerous if independent dealers purchased no surplus milk, since this would give them a buying advantage of 1 cent per quart.

TABLE 12.—SPREAD BETWEEN CLASS I MILK PRICE AND THE BLENDED POOL PRICE TO PRODUCERS, LOUISVILLE, KY., 1931-37

Month	Cents per 100 pounds of milk ¹						
	1931	1932	1933	1934	1935	1936	1937
January.....		44	44	53	26	30	78
February.....		42	50	38	26	36	76
March.....		43	54	39	39	41	76
April.....		61	55	48	48	46	77
May.....	52	57	56	58	58	56	73
June.....	49	53	48	50	66	52	65
July.....	89	46	50	50	61	54	60
August.....	73	55	63	47	59	77	60
September.....	64	41	56	44	61	78	55
October.....	69	42	53	34	39	74	41
November.....	61	39	50	22	34	67	41
December.....	67	43	53	24	31	70	48
Year.....		51	54	43	47	66	64

¹ 4 percent milk f. o. b. dealer's platform.

Source of data: Records of the Falls Cities Milk Producers' Cooperative Association, Louisville, Ky.

The association's efforts to keep the total quantity of surplus in the pool at a minimum on an annual basis involve its bargaining program, as much or more than its attempt to ease the competitive problems of pool dealers. These will be discussed later. (See 46.)

Adequate Supplies and Sales Agreements

The first clause in the contract between the Falls Cities association and its dealers provides as follows: "The Association agrees to sell to the Dealer all the milk required by it for its Class One and Class Two sales, and the Dealer agrees to buy all of such milk from the Associa-

tion * * *." This simplifies and strengthens the association's bargaining position, but places on the association a responsibility to provide an adequate supply of milk. This responsibility has been discharged without a great deal of trouble, although in five different months it has been necessary to get milk from another market. On other occasions it has been necessary to watch daily receipts closely and shift milk between dealers so as to fill all requests. This assurance of supply by the association is one of the most important services to dealers.

At the same time, seasonal variations in receipts, and the surpluses which result from lack of similar variations in fluid sales cause a great variety of problems. Practically every milk association feels that its effectiveness as a sales organization would be greatly increased by a more uniform supply of milk, and that it is justified in spending time, effort and money to encourage more even production.

The Base-Rating Plan

In Louisville, encouragement of more even production was for the first 3 years a major part of the association's program. Its "base" plan was inaugurated in February 1932 and was used as the method of distributing sales returns to producers through October 1934 and again in May, June, and July 1935. The association helped also to obtain feed supplies in the drought of 1936, and through articles in its monthly magazine has encouraged more winter dairying.

The base-rating plan in Louisville assigned to each producer in the pool a base quantity of milk, calculated according to his deliveries during selected months in the past (usually the average for the past 12 months excluding the months of April, May, and June). Each month, then, the producer received the base pool price for base milk delivered (or a percentage of base deliveries the same for all producers) and received the surplus pool price for all other milk delivered. The base pool price represented usually the sales returns from class I and class II milk, and the surplus price the returns from class III sales.

Producers with high base assignments in terms of total deliveries received higher average prices under this arrangement. The objective was to give the higher bases to even producers—or to encourage producers to deliver evenly, to obtain and keep a high base assignment and receive a higher price. As the plan was worked out in Louisville, however, there is some doubt as to whether either of these objectives was attained—by the fall of 1932 practically all producers had high bases and each producer was allowed to keep his same base unless he earned a higher one. That is, the percentage which a producer had to deliver to retain his base quantity varied between 65, 70, and 75 percent so that few producers were affected by the rule.

Trouble with the base plan, in the sense of producer discontent, came largely from two sources. In the first place, any plan such as this introduces a new type of differential into the pooling system, and if it increases the returns to any group it must lower the returns to other producers. Those whose returns are lowered are naturally opposed to the plan. Second, the rules of the plan with reference to the transfers of base milk from one member to another and for the base given to a new producer were changed rather frequently and apparently were not clearly understood by members.

It is impossible to measure exactly the influence of the base plan or any of the other efforts of the association to encourage even production. Since the association started there has been a new health ordinance, a wide increase in the average size of herds, two droughts, and a flood—all of which affected seasonal variations in milk shipments to Louisville. Also the base plan, as an instrument of preventing fall shortage or summer surpluses, was not given an entirely fair trial.

The first bases in 1932 were determined by fall production in 1931, but beginning in April 1932, the base-forming period was from October 1, 1931, to April 1, 1933. For 1933 the base period was from July 1, 1932, to April 1, 1933. The same bases were kept in 1934, and in 1935 the base period was the year 1934 excluding April, May, and June. After April 1, 1932, no relationship was maintained between fluid sales and base milk. Also, after April 1933 a producer might keep his old base if it were higher than the average of such old base and his new base.

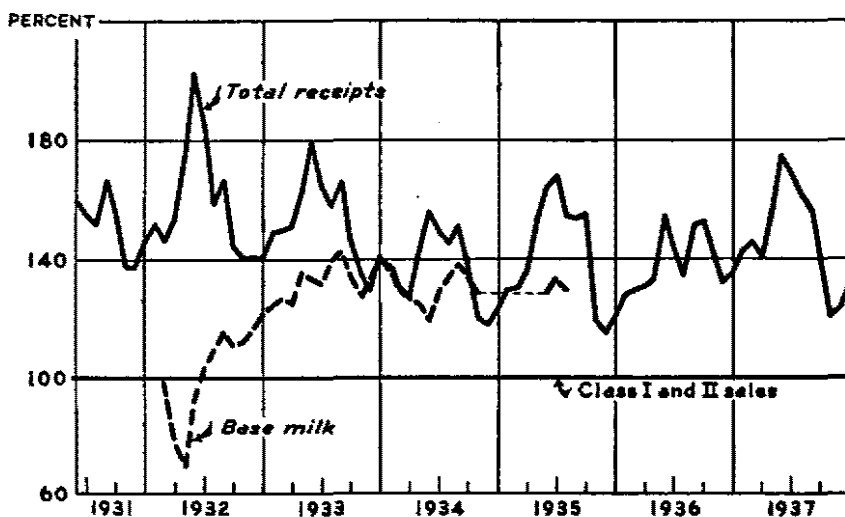


FIGURE 7.—VOLUME OF TOTAL RECEIPTS AND BASE MILK AS RELATED TO CLASS I AND CLASS II SALES, LOUISVILLE, KY., 1931-37.

If a surplus of 20 percent is needed to take care of daily and weekly variations in sales, there have been shortages during the fall months in 3 of the last 4 years.

TABLE 13.—SEASONAL VARIATIONS IN MILK RECEIPTS AT LOUISVILLE AND OTHER SELECTED MARKETS IN THE FOURTH DISTRICT OF THE FARM CREDIT ADMINISTRATION

Market and year	Yearly average receipts per month	Receipts in high month	Receipts in low month	Range from high to low	Average monthly deviation from yearly average
Louisville, Ky.:	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Percent</i>	<i>Percent</i>
1932.....	8,407,174	11,717,324	6,839,306	56.1	12.9
1933.....	7,418,731	9,166,262	6,619,258	34.4	6.4
1934.....	7,077,141	9,161,150	5,870,398	46.8	10.9
1935.....	7,066,967	8,493,892	5,776,269	37.9	10.1
1936.....	7,168,174	8,556,346	6,242,249	32.3	6.9
1937.....	7,163,717	9,143,037	5,068,869	46.2	11.6
Portsmouth, Ohio: 1936.....	1,600,617	1,138,638	877,262	26.1	5.1
Dayton, Ohio: 1936.....	4,628,253	5,465,545	3,782,125	37.2	9.0
Fort Wayne, Ind.: 1936.....	3,138,494	3,906,188	2,600,221	41.6	8.9
Akron, Ohio: 1936.....	7,563,377	9,241,759	6,359,536	37.6	10.8
Chattanooga, Tenn.: 1936.....	1,504,501	1,856,884	1,192,126	44.2	11.1
Canton, Ohio: 1936.....	4,966,564	6,218,948	4,060,730	48.4	12.2
Indianapolis, Ind.: 1936.....	12,843,561	18,039,676	10,991,988	50.7	12.6
Muncie, Ind.: 1936.....	1,492,713	2,178,344	1,108,487	72.0	20.4

Source of data: Records of the cooperative associations or control agencies at the markets. Figures do not represent the entire market in any case, but represent receipts of dealers reporting to the association or control-agency pool.

If the object of the plan had been to prevent fall shortages, bases should have been established anew each year according to fall production. If the object had been to provide a real incentive to produce evenly, bases should have been related to fluid sales, and there should have been a penalty for underbase deliveries.

Studying the monthly relationship between total receipts and fluid sales and between base assignments and fluid sales from 1931 through 1937 in Louisville (see fig. 7) reveals that base milk assignments were more in line with total receipts than with class I and class II sales. In 3 of the 7 years, there was a shortage of milk for one or more months in the fall. Receipts in 1936, when the association helped producers to purchase feed and prevent the drought from affecting shipments, were less variable than in any other year. There was only one fall shortage in the years 1931-34, but there were two such shortages in the 3 years after the base plan was abandoned. The spring and summer surplus was relatively large in 1932, 1933, and 1937.

Another measure of the seasonal variations in receipts is shown in table 13. Here the range from high month to low month and the average monthly deviation from the yearly average are indicated for each year in Louisville, and for 1936 in other selected markets in this district. As compared with markets in the surrounding States, receipts at Louisville were fairly even in 1936. Both the range from high to low and the mean deviation in receipts at Louisville were second lowest among 9 markets studied. Some of these other markets have had about the same experience as Louisville with a base-rating plan and other efforts to reduce seasonal variations. In some, it is probable that the small size of herds—4 to 10 cows in most cases—has acted as a deterrent to more even production.

Class Prices to Dealers

A system of class-use prices, whereby each dealer pays a series of differential prices for milk according to the product into which he processes or sells it, has been the principal bargaining tool of the Falls Cities association. Class prices have been in effect in Louisville since May 1931 for all dealers buying from association members. This use of class prices indicates formal recognition of the fact that the total milk market is made up of a series of markets for separate products—fluid milk, cream, ice cream, flavored milk, and other products; that the demand from dealers for milk to be used in these separate products is different; that the costs of producing and marketing milk of the minimum standard suitable for such uses are different; and that the association has the bargaining strength to make class-use prices effective in the interest of producers.

The fact that a new health ordinance became effective for milk used as fluid milk and fluid cream just about the time the class prices were inaugurated emphasized the differences in production and marketing costs, and helped to justify a difference in price between fluid milk and manufacturing milk. As indicated above, the inclusion of class III milk in the price system and the sale by the association of a part of the grade B milk shipments of members at manufacturing-

TABLE 14.—CHANGES IN DEFINITIONS OF CLASS PRICES IN LOUISVILLE, KY., MAY 1, 1931, TO DECEMBER 31, 1937

Effective date	Use classification for indicated products and sales outlets									
	Fluid milk		Flavored milk		Sweet cream, cottage cheese, and cream buttermilk		Ice cream mix and starter milk	Butter, cheese, and evaporated milk	Charity milk ¹	Milk and cream returns ²
	Reg-ular	Spe-cial ³	Reg-ular	Spe-cial ³	Reg-ular	Spe-cial ³	All	All	All	All
May 1, 1931-Mar. 31, 1932.	I	-----	I	-----	II	-----	II	III	-----	-----
Apr. 1, 1932-May 31, 1932.	I	-----	I	-----	IIa	-----	IIb	III	-----	-----
June 1, 1932-Apr. 30, 1933.	I	-----	I	-----	I	-----	II	III	-----	-----
May 1, 1933-May 31, 1933.	I	-----	I	-----	IIa	-----	IIb	III	-----	-----
June 1, 1933-Oct. 31, 1933.	I	-----	I	-----	IIa	-----	IIb	IIIb	-----	IIIs
Nov. 1, 1933-May 31, 1934.	I	-----	I	-----	IIa	-----	IIb	IIIb	IIIc	IIIs
June 1, 1934-Dec. 31, 1936.	I	-----	II	-----	II	-----	III	III	Charity	-----
Jan. 1, 1936-June 23, 1936.	I	Ia ⁴	II	IIa ⁴	II	IIa ⁴	III	III	Charity	-----
June 24, 1936-July 31, 1937.	I	-----	II	-----	II	-----	III	III	Charity	-----
Aug. 1, 1937-Dec. 31, 1937.	I	Ia ⁴	II	-----	II	-----	III	III	Charity	-----

¹ Classified separately from all milk used in the indicated products only for the months shown.

² Sales to restaurants and selected other wholesale outlets at special discounts.

³ Sales to schools, etc., of pints and half pints at a previously contracted price.

Source of data: Records of the Falls Cities Cooperative Milk Producers Association, Louisville, Ky.

milk prices, is necessary if the association is to supply dealers' demands in short seasons and afford all members a market every day in the year.

The definitions of the different classes of milk have been changed frequently (nine times in 80 months) in Louisville since the original three classes were inaugurated in May 1931 (see table 14). On only one occasion have all the classifications been exactly the same as those used before. At one time in 1933-34, there were six separate classes. With all these changes, only three have been major ones: (1) Fluid cream was shifted from class II to class I for a period of 11 months in 1932-33, but has remained in class II since May 1, 1934; (2) flavored milk was permanently shifted from class I to class II with the start of the Federal control program on June 1, 1934; and (3) milk for ice cream and starter purposes was permanently shifted from class II to class III on June 1, 1934. Most of the other changes seem to have been to meet special temporary sales conditions and to get a higher price for some of the surplus milk.

As a basis for determination of class prices, dealers' sales records have been audited every month since May 1931 by certified public accountants. The cost was borne by the association until June 1934, when it was shifted to the office of the market administrator. This auditing has assured accuracy in the use of class prices and in the blended returns to producers and has provided the association with accurate current data on receipts and sales.

Other Bargaining Efforts

Besides service to dealers, assistance in sales promotion, and audited class prices, the program of the Falls Cities association has included means of supporting its position with reference to prices. First, a great deal of work has been done to insure that producer-members understand the association's problems and programs. The methods

TABLE 15.—NUMBER OF ACTIVE MEMBERS AND VOLUME OF MILK MARKETED THROUGH THE FALLS CITIES COOPERATIVE MILK PRODUCERS' ASSOCIATION, LOUISVILLE, KY., 1933-38

Year ending Jan. 31 ¹	Active ² members	Volume of milk mar- keted ³	Portion of total market represented ⁴
	Number	Pounds	Percent
1933.....	1, 263	99, 999, 141	94.9
1934.....	1, 106	88, 350, 920	90.1
1935.....	1, 062	82, 295, 870	87.4
1936.....	1, 011	81, 068, 471	82.7
1937.....	995	81, 590, 775	79.2
1938.....	1, 003	81, 644, 101	79.4

¹ Business year of the association.

² A average for 12 months.

³ Includes a small indeterminate volume of milk sold by nonmembers to cooperating dealers.

⁴ Based on estimates of the market total.

Source of data: Records of the association and of the market administrator at Louisville.

TABLE 16.—FINANCIAL CONDITION OF FALLS CITIES COOPERATIVE MILK PRODUCERS' ASSOCIATION, LOUISVILLE, KY., 1932-38

Date	Cash and current assets	Fixed and other assets	Total liabilities	Net worth
Feb. 15, 1932.....	\$3,660.64	\$2,089.01	\$2,902.15	\$2,847.50
Jan. 31, 1933.....	11,043.74	2,976.16	1,813.55	12,206.37
Jan. 31, 1934.....	18,025.36	2,880.40	1,045.98	19,840.78
Jan. 31, 1935.....	21,920.71	2,172.23	85.88	24,007.06
Jan. 31, 1936.....	22,315.86	2,284.50	67.30	24,533.06
Jan. 31, 1937.....	26,194.40	2,041.76	2,085.32	26,150.84
Jan. 31, 1938.....	30,620.81	1,699.36	125.22	32,194.95

Source of data: Financial statements of the association.

used and their effectiveness are discussed in later sections of this bulletin (58 and 60). Second, the association has kept a dominant position in number of active shippers and quantity of milk received. Table 15 shows that, although the number of members has declined, the quantity of milk received has not declined markedly, and that the Falls Cities association has always been dominant in the market.

Third, the Falls Cities association made provision from the outset for building a contingency reserve sufficient to meet emergencies of various kinds. A special deduction is permitted to build this reserve, but it has never been made. Instead, the excess of income over expenses has been the only source of funds for this purpose. This reserve is designed to give the association bargaining strength, to enable it to employ legal assistance when needed, to make it possible to change the method of operation on short notice, and to guarantee market outlets and milk checks to all members. A summary of association balance sheets shows that liabilities outstanding at the beginning were quickly paid, that few fixed assets have been accumulated, but that substantial additions to current assets and net worth have been made each year. (See table 16.) The reserve is not allocated to members or evidenced to them in any manner.

A fourth phase of the association's bargaining work has been to keep volume in line with demand. The bargaining position of the seller in the market for any commodity is weaker when volume greatly exceeds buyer's requirements. This is true in the milk market, on both annual and seasonal bases. The work of the Falls Cities association in connection with seasonal surplus problems has already been discussed. On an annual basis, the association's work has been more varied and somewhat more general in nature. First, competitive supply conditions have been watched closely and efforts made to keep the milk price level on a sound basis with reference to (a) cost of production, (b) prices of other farm products, and (c) prices of manufactured dairy products. Second, the association has sponsored or cooperated in other developments which had the effect of reducing

competition. Central control of the assembly system and enforcement of the health ordinance, for example, undoubtedly have limited both the entry of new shippers into the market and the shifting from other types of dairy or general farming to production of grade B milk. Finally, through meetings and the monthly magazine, members have been informed as to market-supply conditions and encouraged to increase or to decrease shipments as conditions warranted.

The final phase of the bargaining work is the contractual provision for arbitration in case of disagreement between dealers and the association on terms of sale. There have been five arbitrations in Louisville since May 1931, all by a single arbitrator jointly selected. Provision is made for three men if one cannot be found acceptable to both parties. Four of these arbitrations have taken place since the Federal program came into the market. Likewise, four of the five have been to settle a disagreement as to prices for class I milk, and in some cases for class II and class III milk as well. The other dealt with the procedure for converting dealers' sales units of various products into pounds of whole milk of the fat content received from producers. All were settled without a great deal of trouble and each represented a compromise between the positions of the disagreeing parties.

Results of Bargaining Work

The prices at which the association has sold its three different classes of milk—fluid milk, fluid cream,¹² and surplus milk—have varied widely but have steadily increased since it began operating. (See fig. 8.) For fluid milk, the price per 100 pounds has ranged from \$1.85 to \$3.16, and has averaged \$2.33 for the 80 months. The fluid cream price was the same as the fluid-milk price for 11 months, but was usually 60 to 65 cents lower per 100 pounds of milk. The price for surplus, in turn, has been about 55 cents below the price for milk used in fluid cream, or about \$1.15 per 100 pounds below the fluid-milk price.

As compared with the average price received by other producers for ungraded milk sold to manufacturing plants in the area—the competitive price level for grade B milk—the association's surplus price has averaged 5 cents higher, its fluid-cream price about 60 cents higher, and its fluid-milk price \$1.20 higher per 100 pounds of milk. In each case, however, there have been wide fluctuations in the amount of this spread. (See fig. 9.) For example, fluid milk was only 60 cents above the manufacturing price in one month in 1935 and more than \$1.60 above in the winter of 1936-37.

¹² Includes cottage cheese and creamed buttermilk.

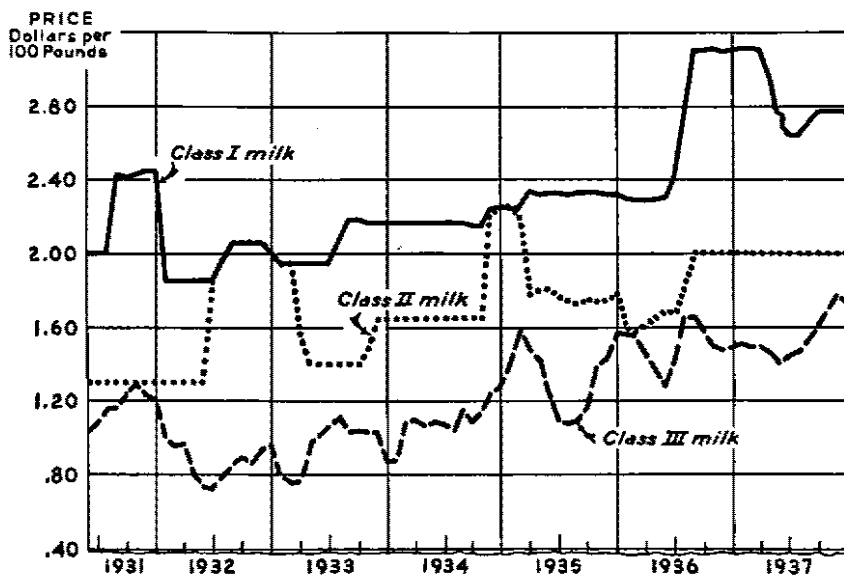


FIGURE 8.—ASSOCIATION PRICES TO DEALERS FOR FLUID MILK, FLUID CREAM, AND SURPLUS MILK, 1931-37.

All class prices have tended to increase during this period.

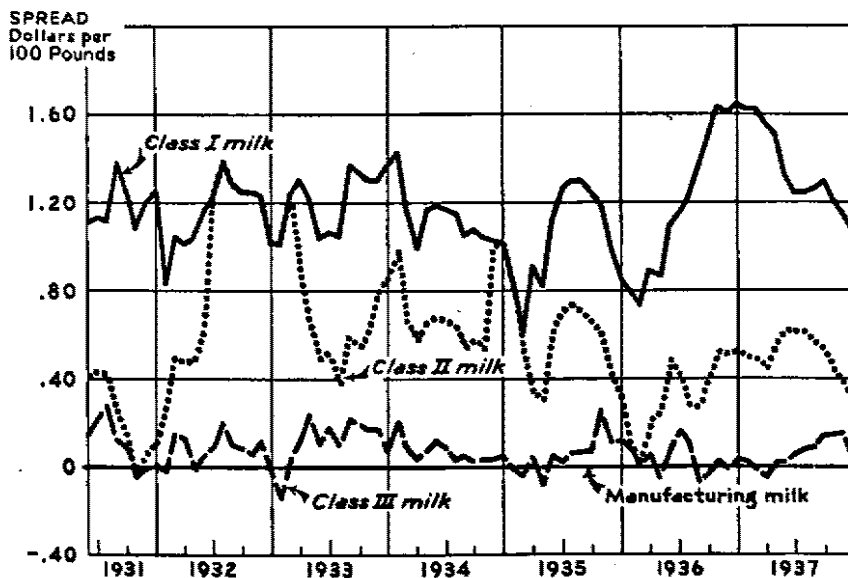


FIGURE 9.—SPREAD BETWEEN ASSOCIATION CLASS PRICES AND THE PRICE LEVEL FOR MANUFACTURING MILK, 1931-37.

Surplus prices have been close to the manufacturing level, but class I and class II prices have been above it by widely varying margins.

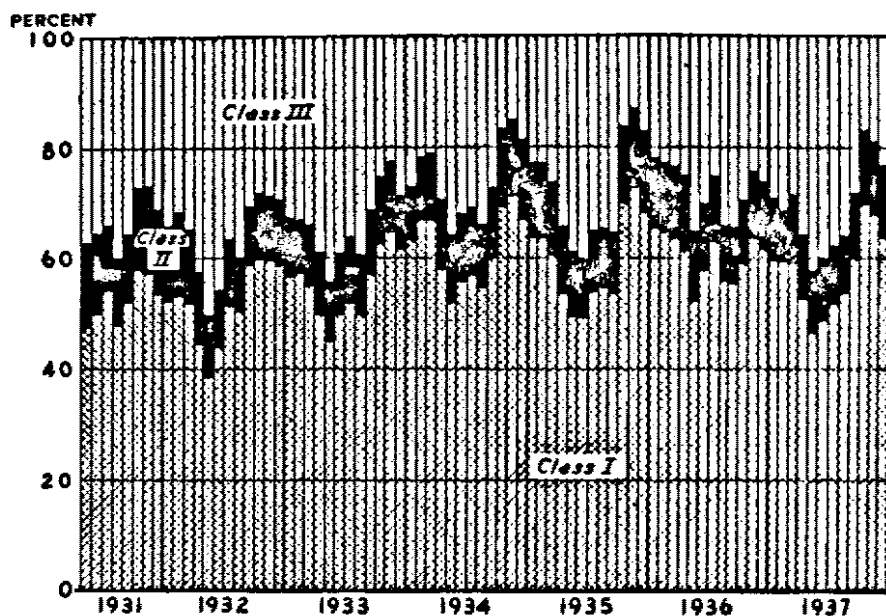


FIGURE 10.—SALES IN EACH CLASS AS A PERCENTAGE OF TOTAL MONTHLY RECEIPTS, 1931-37.

Although varying considerably between seasons, classes I and II sales have regularly accounted for well over 60 percent of total milk receipts.

As high as 72 and as low as 38 percent of the association's milk receipts have been sold at the class I price. Class II sales have regularly amounted to from 10 to 15 percent of the total, and surplus milk to from 13 to 50 percent of the total. For the entire period, class I sales represented about 57 percent of receipts, class II sales about 12 percent, and class III about 31 percent. As shown in figure 10, there has been a regular seasonal variation, particularly in the percentages of class I and class III, and some change in the respective percentages for the various years.

Average Prices to Producers

The blended prices shown in table 17 represent the real end product of all the association's bargaining activities—sales promotion, auditing, class prices, and others. The outstanding fact here is the increase in prices from an annual average of \$1.43 in 1932 to \$2.25 per 100 pounds for all milk in 1937. From January 1933 through June 1937 there were only 4 months in which the price was not as high or higher than the same month a year earlier, but this did not apply to the last half of 1937.

The Falls Cities association and its bargaining efforts undoubtedly were of major importance in determining these prices. It is true, however, that other developments tended to increase milk prices over the period 1932-37. All other farm prices increased, general business

conditions improved, prices for manufacturing milk increased, and it seems clear that even without the association's efforts there would have been some increase in market milk prices in Louisville. The changes in some of these factors on an annual basis are shown in table 18.

The only information available on Louisville milk prices before May 1931 is the price paid by dealers for milk used in fluid milk and fluid cream. The comparable price since May 1931 would be the average of association prices for class I and class II milk—the two sets of prices form a continuous series back to 1925 or earlier. On this basis, the data in figure 11 compare, on a monthly basis, the changes in Louisville milk prices with other farm prices and manufacturing-milk prices in the area, and with wholesale prices in the

TABLE 17.—BLENDED MONTHLY PRICE PER 100 POUNDS OF MILK RECEIVED BY MEMBERS OF FALLS CITIES COOPERATIVE MILK PRODUCERS' ASSOCIATION, LOUISVILLE, KY., 1931-37

Month	1931	1932	1933	1934	1935	1936	1937
January.....		\$1.41	\$1.51	\$1.65	\$2.00	\$2.00	\$2.40
February.....		1.43	1.45	1.50	2.00	2.00	2.42
March.....		1.42	1.41	1.70	1.97	1.95	2.42
April.....		1.24	1.40	1.70	1.98	1.90	2.23
May.....	\$1.48	1.18	1.39	1.60	1.78	1.80	2.00
June.....	1.51	1.22	1.47	1.68	1.70	1.95	2.00
July.....	1.57	1.50	1.57	1.68	1.75	2.20	2.05
August.....	1.73	1.50	1.55	1.71	1.77	2.41	2.15
September.....	1.82	1.64	1.62	1.74	1.75	2.40	2.30
October.....	1.87	1.63	1.65	1.84	1.97	2.44	2.44
November.....	1.85	1.66	1.68	2.03	2.02	2.51	2.44
December.....	1.79	1.62	1.65	2.01	2.05	2.48	2.37
Year.....	1.69	1.43	1.52	1.76	1.87	2.09	2.25

Source of data: Records of the association. The price for the month represents the weighted average price for milk testing 4 percent butterfat, f. o. b. Louisville, association dues deducted.

TABLE 18.—ANNUAL CHANGES IN SELECTED FACTORS AFFECTING PRICES FOR MARKET MILK IN LOUISVILLE, KY., 1931-37

Year	Index (1925-27=100)			Price per 100 pounds for—		
	All wholesale prices in the United States	Other farm prices in the milkshed ¹	Manufacturing milk prices in the milkshed	Manufacturing milk in the milkshed ¹	Association class I milk	All association milk
	Percent	Percent	Percent			
1931.....	73.3	67.4	54.6	\$1.11	\$2.17	\$1.60
1932.....	65.0	43.6	39.8	.81	1.94	1.43
1933.....	66.1	52.2	40.9	.83	2.05	1.52
1934.....	75.2	55.9	50.2	1.02	2.19	1.76
1935.....	80.3	54.9	62.0	1.27	2.34	1.87
1936.....	81.1	59.9	71.7	1.46	2.75	2.09
1937.....	88.6	123.1	73.3	1.50	2.69	2.25

¹ See Appendix A, table 35.
² See Appendix A, table 34.

Source of data: Wholesale prices are from the U. S. Department of Labor, Bureau of Labor Statistics, 1931-37. Farm prices in the milkshed are from the U. S. Department of Agriculture, Bureau of Agricultural Economics.

Prices of milk for manufacturing are from records of the Falls Cities Cooperative Milk Producers' Association, Louisville, Ky.

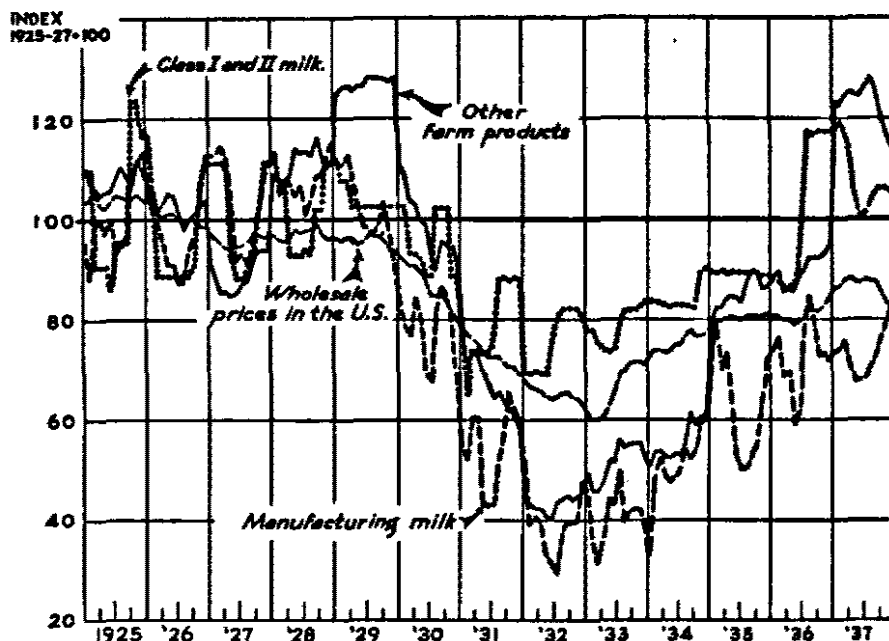


FIGURE 11.—INDEX OF WHOLESALE PRICES IN THE UNITED STATES AND PRICES IN LOUISVILLE FOR CLASS I AND CLASS II MILK, MANUFACTURING MILK, AND OTHER FARM PRODUCTS, 1931-37.

Fluid-milk and cream prices did not go down as much as other price levels and began a steady recovery somewhat sooner.

United States from 1925 to 1937. Until the association started early in 1931, Louisville milk prices were trending downward at about the same rate as the other prices. That Louisville milk prices did not continue to go down, did not go down as far, and began to climb sooner than these other price levels, in the authors' opinion, may be attributed partly to the association. The fact that a new health ordinance became effective early in 1932 would be expected to have some influence in raising the level of classes I and II prices and in making the competition between market milk and manufacturing milk a little less direct.

The Quantity of Surplus

Changes in the total receipts of market milk in Louisville, and in the quantity of surplus milk in the market, are both a cause and an effect with reference to the price level. When milk prices are out of line with competitive prices, an incentive is provided for farmers to change the size of their dairy enterprises or sell their milk in other channels, and when the surplus is unduly large or small there is usually pressure from one agency or another for a change in milk prices. One of the major objectives of the association price policies has been to maintain the relationship with competitive prices and cost items which

would keep this surplus at the minimum level necessary to assure an adequate supply at all seasons.

Figure 12 shows the volume of surplus milk in the pool each month, adjusted for normal seasonal variations and expressed as a percentage of class I and class II sales. It is impossible to measure month-to-month changes without making this seasonal adjustment, because the seasonal variations in the quantity of surplus were very wide—from 162 percent of the yearly average in May to 64 percent in November. When the adjustment has been made, it becomes apparent that there have been several major changes in the quantity of surplus milk in the pool in Louisville. The general trend in the quantity of surplus was downward from January 1932 through December 1934, but there was a fairly large surplus during the first 8 months of 1935 and again in the last part of 1936 and the first 7 months of 1937.

The data in table 19 show, for six separate periods during 80 months, the average percentage of surplus milk, and the variation in four factors which would be expected to influence the quantity of surplus: (1) The amount of rain which fell during the period, expressed as a percentage of normal rainfall; (2) the purchasing power of milk in terms of feed, including hay; (3) the spread in cents per 100 pounds between the pool price for market milk and the average price for

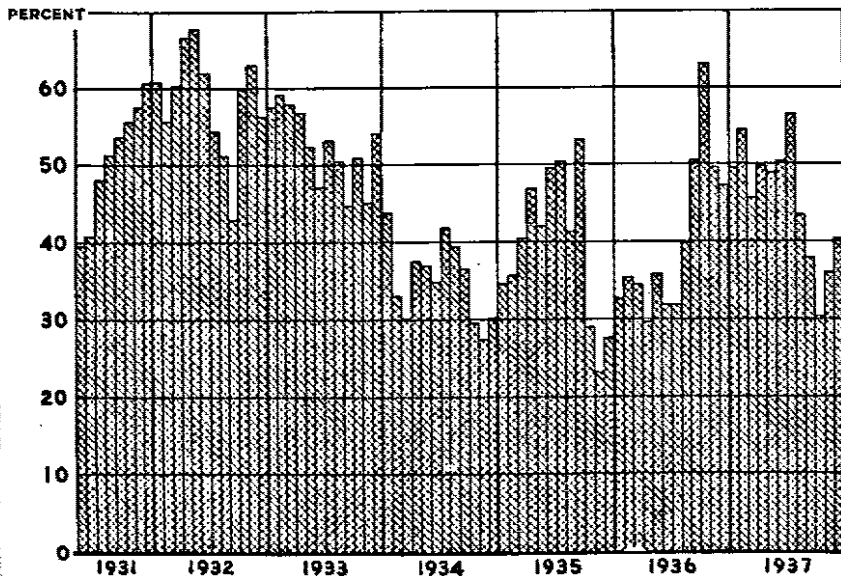


FIGURE 12.—SURPLUS MILK IN THE POOL, AS A PERCENTAGE OF FLUID MILK AND CREAM SALES, ADJUSTED FOR SEASONAL VARIATIONS, LOUISVILLE, KY., 1931-37.

Following a downward trend from 1932 through 1934, the quantity of surplus milk has varied widely.

TABLE 19.—PROPORTION OF SURPLUS MILK IN THE POOL FOR SELECTED PERIODS, AND FACTORS PROBABLY RESPONSIBLE FOR THE CHANGES, LOUISVILLE, KY., 1931-37

Period (months inclusive)	Surplus milk as a percentage of class I and class II sales ¹	Rainfall as a percentage of normal	Purchasing power of grade B milk in terms of feed (1931-37=100)	Spread between price for market milk and milk for manufacturing purposes ¹	Purchasing power of grade B milk in terms of other farm products (1931-37=100)
	Percent	Percent	Index	Cents	Index
July 1931-July 1932.....	58	89	115	80	113
October 1932-December 1933.....	54	102	117	69	118
January 1934-February 1935.....	38	65	92	70	119
March 1935-September 1935.....	46	130	86	94	83
October 1935-July 1936.....	31	57	103	80	86
September 1936-July 1937.....	51	121	77	82	78
Average.....	46	94	100	86	100

¹ Both factors adjusted for seasonal variations.

Source of data: Based on tables 45-49 of appendix A.

manufacturing milk; and (4) the purchasing power of market milk in terms of other farm products. Statistically, there is a highly significant relationship between changes in these four factors and changes in the volume of surplus.¹⁴ The only factors of known importance which are lacking are the effects of the health ordinance and of the association's educational work. Both undoubtedly influenced seasonal variation to some extent.

An analysis of these factors indicates that among those affecting the volume of surplus milk during this period, rainfall was as important as any other factor on which data were available. In many of the periods of low surplus, rainfall was far below normal, and in periods of high surplus rainfall was often above normal. The milk-feed ratio was favorable to high production in the early high-surplus periods, but did not appear to be as significant in some of the later periods. Similar relationships were found between milk prices and other farm prices. The spread between grade B milk prices and manufacturing prices was exceptionally high only in 1936-37, and probably encouraged some shifting to grade B production. In the early period, however, the health ordinance was not yet fully effective, so the spread of around 60 cents might well have been as high in terms of differential production and marketing costs as a spread of 80 or 85 cents in later years.

Relating changes in the surplus to the association's price policies, it seems clear that neither of the two periods of low surplus can be attributed, except possibly in a very small degree, to the price of grade B milk, but were caused largely by deficient rainfall. Only one, and possibly two of the periods of high surplus can be attributed to the fact that the milk price was exceptionally high relative to feed

¹⁴ See appendix B, statistical note 2.

prices, other farm prices, and other milk prices. During the 3 years 1935-37, the price for grade B milk was never as high in relation to feed prices and other farm prices as it was in 1931 through 1934, and this has undoubtedly had some influence in bringing total supplies more closely in line with dealers' requirements for fluid-milk and fluid-cream sales.¹⁵

Dealers' Margins on Fluid Milk

Interviews with producer members indicate that many of them appraise the bargaining strength and success of their milk association by the percentage of the retail milk price which is returned to them. They are often misled because they compare the top retail price with the blended price they receive. As a matter of fact, the dealers' selling price is much lower than the announced retail price—in Louisville the price is reduced to 2-quart customers and 70 percent of sales are at wholesale at a still lower price. At the same time, the dealers' purchase price is 50 to 60 cents per 100 pounds above the pool or blended price. Agencies other than dealers must be paid also for services rendered in connection with the marketing of fluid milk. These include stores, hotels, and restaurants selling milk; the health department; the dairy council; the market administrator; the association; and the milk haulers.

Results of an analysis of milk prices and costs in Louisville for an 8-year period (1930-37) are shown in table 20. The retail milk dollar is made up of eight parts. The producer and the milk dealer divide from 85 to 90 percent of the total, the haulers and the stores together receive about 10 percent, and the balance of about 2 percent is split among four other agencies. The milk dealers have not received as much as 50 percent of the total since 1931. In 1936 and 1937 the

TABLE 20.—DISTRIBUTION OF THE PRICE PAID BY CONSUMERS FOR FLUID MILK IN LOUISVILLE, KY., 1930-37

Year	Percentage of total consumer price received by each agency								Total
	Milk dealers	Stores, hotels, etc.	Dairy council	Health department	Cooperative	Federal market administrator	Milk haulers	Producers at farms	
1930.....	52.2	5.4	None	None	None	None	5.4	37.0	100
1931.....	50.0	0.0	0.4	0.8	0.8	None	5.9	37.1	100
1932.....	47.4	0.9	.5	.9	.9	None	6.4	37.0	100
1933.....	44.5	0.9	.5	.7	.9	None	5.8	40.7	100
1934.....	45.0	0.5	.4	.8	.9	0.1	5.0	41.5	100
1935.....	46.1	0.0	.4	.8	.8	.2	4.6	41.3	100
1936.....	41.8	0.5	.4	.6	.7	.2	4.2	46.6	100
1937.....	43.1	0.2	.4	.6	.7	.2	4.0	45.8	100

Source of data: Estimates based on data obtained in the study.

¹⁵ Since the study was completed, the association has inaugurated a system of pricing which bases both the fluid-milk price and the fluid-cream price directly on manufacturing-milk prices, more definitely recognizing the competition from this source.

dealers' share was for the first time below that of producers. The costs of the services rendered by such agencies as the health department, dairy council, market administrator, and the association remain about the same so that on a percentage basis they account for a smaller proportion as the price level increases. The percentage of the total received by producers f. o. b. the farm has increased rather steadily since 1932. Before association dues and hauling charges were deducted, they received over 50 percent of the total, both in 1936 and 1937.

Laboratory and Service Program

MANY OF the conditions which fostered producer discontent before the Falls Cities association was formed related to matters other than the price of milk. Consequently, the association has spent much time and money to improve these other market conditions. Services undertaken with this aim in view include guarantee of payment, regular testing of butterfat, checking of weights upon request, temperature and bacteria tests, herd tests for butterfat and mastitis, cooperative purchasing of feed and supplies, assistance on quality and other production problems, supervision of trucking, and help on hauling problems. Some of them have required no special program of work but the availability of substantial cash reserves has made it possible to render services as they are needed. Other services have required the hiring of special employees and the regular expenditure of considerable portions of the monthly income.

Butterfat Testing and Other Laboratory Work

Since May 1931 the association has maintained a laboratory department mainly for the purpose of checking the butterfat test of each producer's milk often enough to insure accuracy in the dealer's test. (See fig. 13.) Because a State regulation requires that the fat test

TABLE 21.—AVERAGE PERCENTAGE OF BUTTERFAT CONTENT OF MILK DELIVERED BY MEMBERS OF THE FALLS CITIES COOPERATIVE MILK PRODUCERS' ASSOCIATION, BY MONTHS, 1933-37

Month	1933	1934	1935	1936	1937
January.....	4.16	4.26	4.14	4.34	4.23
February.....	4.16	4.20	4.10	4.32	4.17
March.....	4.16	4.14	4.01	4.08	4.13
April.....	4.07	4.02	3.97	4.08	4.02
May.....	4.02	3.94	4.02	4.00	4.02
June.....	3.90	3.93	4.00	3.99	3.97
July.....	3.94	3.96	3.87	3.90	4.04
August.....	4.01	4.02	3.93	3.98	4.06
September.....	4.07	4.15	4.09	3.98	4.20
October.....	4.31	4.32	4.30	4.25	4.48
November.....	4.41	4.24	4.33	4.25	4.43
December.....	4.31	4.30	4.45	4.29	4.46

Source of data: Records of the association.



FIGURE 13.—THE FALLS CITIES COOPERATIVE MILK PRODUCERS' ASSOCIATION LABORATORY.

A sample of each member's milk is tested about three times a month.

on which the producer is paid be based on a sample of each day's milk, it has not been practicable for the association to take over full control of sampling and testing. Producers are paid, therefore, on the dealer's test, but a high degree of accuracy in such tests is assured by the association's check-testing program.

Several changes have been made in the exact method of checking these tests, but usually a sample of each member's milk is tested about three times a month, and a close check is made of dealers' samples when the association and the dealer tests show wide variance. As indicated in table 8, considerable money has been expended each year on the testing and laboratory program.

The standard price in Louisville refers to milk with a butterfat content of 4 percent. As this butterfat content is higher or lower, the price is higher or lower, both to the dealer and to the producer. The differential per 100 pounds of milk for each one-tenth of 1 percent variation in butterfat content is about the same as one-tenth of the Chicago butter price per pound. In other words, with a butter price of 30 cents per pound, if the price for 4.0 percent milk were \$2.00 per 100 pounds, the price for 4.1 percent milk would be \$2.03, and the price for 3.9 percent milk \$1.97. The differential has been fairly low in Louisville since the association started, but there has been little change in the butterfat content of the milk (table 21). The average test is usually above 4.0 percent except for 2 or 3 months in the summer.

The nature of the other laboratory services rendered is indicated by the data in table 22 showing the requests received from members. They usually involve visits to the producer's farm and a test of each

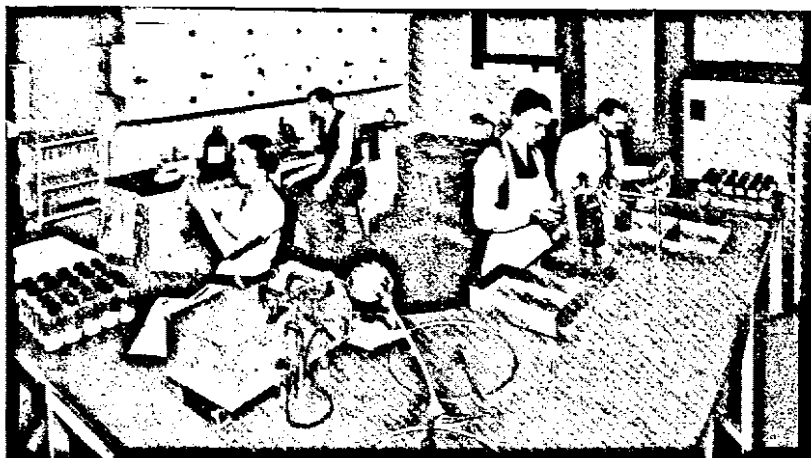


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TABLE 22.—LABORATORY SERVICES REQUESTED BY MEMBERS, FALLS CITIES COOPERATIVE MILK PRODUCERS' ASSOCIATION, 1933-37

Nature of service requested	Number of requests received				
	1933	1934	1935	1936	1937
Check of milk weights.....	32	19	32	15	6
Check of milk temperature.....	3	5	2	8	3
Herd test for butterfat.....	242	198	181	159	79
Herd test for bacteria.....	46	32	55	42	32
Herd test for mastitis.....			10	12	15
Other laboratory service.....	1	3	8	8	
Total services.....	324	300	268	241	136
Members requesting ¹	304	285	247	222	130

¹ Number of separate requests, some of which called for more than one type of service.

Source of data: Records of the association.

cow in the herd. Special requests for butterfat tests are more numerous in the summer months when tests are lower. The fact that the number of requests per year has declined may be some indication of greater producer satisfaction with the accuracy of dealer tests.

Weight tests involve the same type of work as butterfat tests. In addition, the association lends scales to its members for the purpose of recording daily weights. Most of the other laboratory services involve checking the requirements of the city health ordinance and giving assistance to members when they are "degraded" because of high bacteria count, high temperature, or failure to meet other quality requirements.

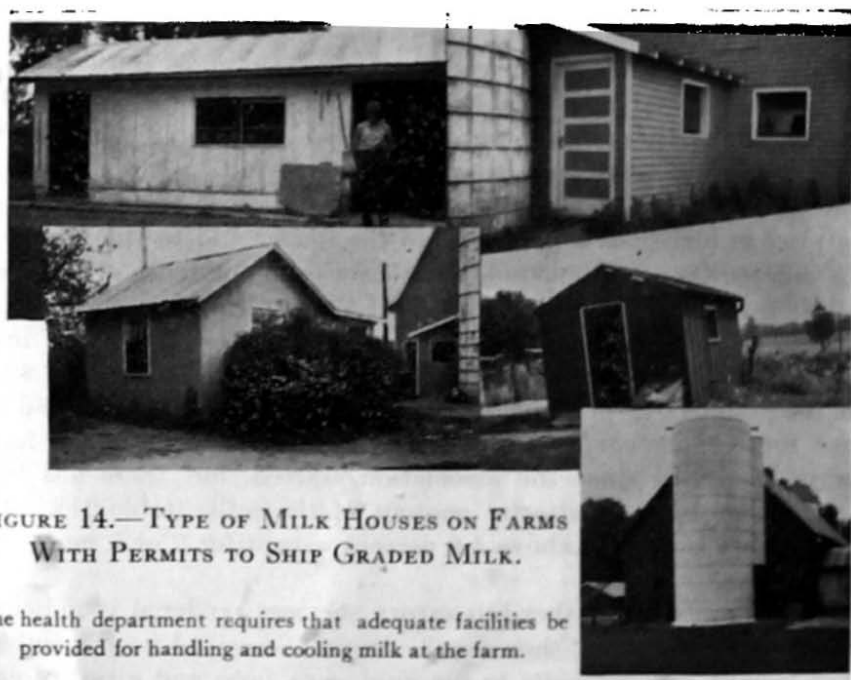


FIGURE 14.—TYPE OF MILK HOUSES ON FARMS WITH PERMITS TO SHIP GRADED MILK.

The health department requires that adequate facilities be provided for handling and cooling milk at the farm.

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Nature of service requested	Number of requests received				
	1933	1934	1935	1936	1937
Check of milk weights.....	32	17	32	15	8
Check of milk temperature.....	3	5	2	8	3
Herd test for butterfat.....	242	196	141	159	79
Herd test for bacteria.....	46	82	55	42	32
Herd test for mastitis.....			10	12	15
Other laboratory service.....	1	3	8	5	.....
Total services.....	324	300	268	241	126
Members requesting ¹	304	285	247	222	120

¹ Number of separate requests, some of which called for more than one type of service.

Source of data: Records of the association.

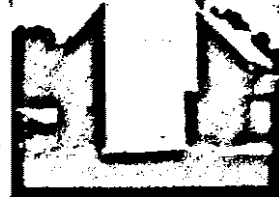
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Improvement of Facilities

When the new health ordinance was adopted in Louisville about the time the Falls Cities association began operating, the cost of administration was borne by the dealers rather than the producers. The association was instrumental in having the effective date of the ordinance delayed to give producers more time to make the necessary changes in their barns and equipment. (See fig. 14.) In addition, the association helped members to plan the needed changes in buildings and equipment, and provided a service through which supplies and equipment might be purchased at a saving.

Data in tables 23 and 24 indicate the magnitude of the quality problem among Louisville producers. It is probable that about 1,500 producers attempted to meet the health regulations in 1931 and 1932 when the new ordinance was adopted. Close to 80 percent of these had to remodel a barn or build a new one. An even greater number had to remodel or build a milk house. Later changes include the

TABLE 23.—CHANGES IN BUILDINGS AND EQUIPMENT MADE NECESSARY BY THE HEALTH ORDINANCE OF 1931, FOR PRODUCERS SUPPLYING THE LOUISVILLE MARKET

Year ending June 30	Number of farms making indicated improvements						
	Dairy barns		Milk houses		New sanitary toilets	New mechanical coolers	New water supplies
	Re-modeled	Built	Re-modeled	Built			
1932.....	982	40	388	881			
1933.....	116	58	1	31	231		
1934.....					19		
1935.....					49	34	
1936.....					117	47	
1937.....					172	104	32
Total.....	1,078	98	389	912	588	185	32

Source of data: Records of the city health department, Louisville, Ky.

TABLE 24.—CHANGES IN THE GRADE B STATUS OF MILK PRODUCERS UNDER THE LOUISVILLE HEALTH DEPARTMENT, 1932-37

Year ending Aug. 31	New permits granted	Permits suspended	Producers degraded	Producers regraded
1932.....	1,062	(¹)	209	162
1933.....	57	(¹)	618	607
1934.....	37	20	611	522
1935.....	47	15	842	716
1936.....	78	5	452	435
1937.....	107	45	628	598
Total.....	1,398	85	3,359	3,030

¹ No data available.

Source of data: Records of the city health department, Louisville, Ky.

installation of sanitary toilets, mechanical coolers, and improved water supplies. These major requirements are in addition to numerous changes in and greater attention to small equipment and supplies.

The average cost of meeting the health ordinance, according to producers interviewed in the course of the study, was \$402.40 per farm (representing about 20 cows). The following shows the distribution of the producers according to total cost reported:

Cost of meeting ordinance:	Number of producers
None.....	11
\$1-\$99.....	24
\$100-\$199.....	50
\$200-\$299.....	57
\$300-\$399.....	44
\$400-\$499.....	19
\$500-\$599.....	23
\$600-\$699.....	14
\$700-\$799.....	6
\$800-\$899.....	2
\$900-\$999.....	1
\$1,000 up.....	26
Total.....	277

The number of producers "degraded" under the health ordinance has averaged about 50 a month. (See table 24.) This degrading means that the milk is purchased at ungraded or manufacturing-milk prices until the producer is "regraded"—usually a period of 7 to 15 days. Much of the association's work on quality in the last few years has involved helping members to locate and correct the cause of the failure of the milk or dairy equipment to meet quality requirements. Field visits to the member's farm, and tests for mastitis, off-flavor, high temperature, and general sources of bacteria are included in this service.

Cooperative Purchasing

As mentioned earlier, the Falls Cities association has made arrangements for members and other producers in the area to purchase feed and a variety of dairy and farm equipment items at a substantial discount below prevailing retail prices. The association manufactures disinfectant and a fly spray which are sold directly to members. Feed may be purchased at special prices through a local feed merchant who, with the milk dealers, cooperates in handling cans, pails, strainers, disks, and a variety of other equipment. Each member is given a card which entitles him to discounts at a number of hardware and farm equipment stores in Louisville.

According to its officials, the association has had no credit problems in connection with cooperative purchasing. Sales of disinfectant and

fly spray are on a cash or c. o. d. basis. Other purchases are made directly from dealers, the association acting only as a bargaining agent.

Supervision and Control of Hauling

Charges for hauling from the farm to city plants amount to between 10 and 15 percent of the blended price to producers for milk f. o. b. dealers' plants. This makes hauling arrangements and costs an important item in the marketing of milk. The association has given much attention to hauling problems from the beginning; the system as a whole has been made more efficient and the cost to producers has been lowered. The association's part in these changes involved the signing of a lease contract by each hauler, replanning the truck routes, selecting some new haulers, and bargaining for lower rates.

Most of the work with hauling problems was done in 1932 and 1933. The association was able to reduce the number of routes from 114 to 60 and the rates per 100 pounds for hauling by 5 to 10 cents; and to enter into a lease contract with the truck owners which gives the association limited control over the hauling system. Under the lease contract the trucks are operated for the association (see fig. 15), and are exempt from a gross weight and mileage tax authorized by a State law passed in 1932. Under the terms of the contracts the haulers are guaranteed payment for their work and they, in turn, agree to provide covered trucks, cargo insurance, and efficient service. Such matters as hauling rates and type of service are left to individual negotiation but are subject to association approval.

The average hauling rate in the area in 1937 was 22.7 cents per 100 pounds for 1,121 producers on 58 of the 60 routes. Altogether 25 different rates were in effect, ranging from 11 to 37 cents. For more than half of the shippers the rate was between 20 and 25 cents per 100



FIGURE 15.—ASSOCIATION TRUCKS UNLOADING AT DEALER'S PLATFORM. Through continued attention to hauling problems, the association has made the service more efficient and reduced the cost to producers.

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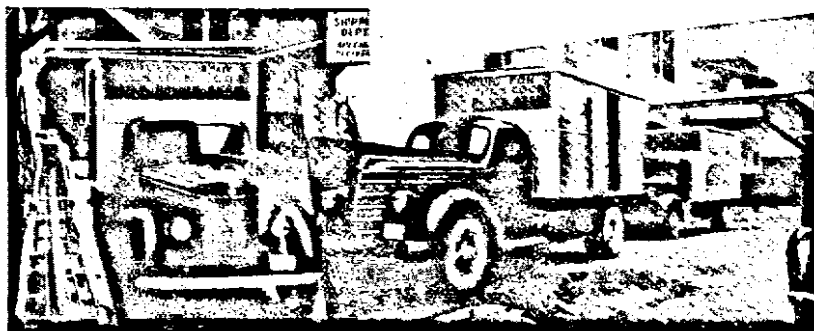


FIGURE 15.—ASSOCIATION TRUCKS UNLOADING AT DEALER'S PLATFORM. Through continued attention to hauling problems, the association has made the service more efficient and reduced the cost to producers.

TABLE 25.—DISTRIBUTION OF 229 MILK PRODUCERS ACCORDING TO HAULING RATES PAID AND DISTANCE FROM MARKET, LOUISVILLE, KY., 1937

Hauling rate per 100 pounds (cents)	Number of producers in group					Total
	0-9.9 miles	10-10.9 miles	20-29.9 miles	30-39.9 miles	40 miles and more	
10-14.9	3		1			4
15-19.9	7	23	19	4	1	54
20-24.9	6	12	27	22	1	68
25-29.9	1	15	18	26	13	73
30 and more			2	14	12	28
Total	17	50	67	68	27	229

Source of data: Interviews with producers in the area in July and August 1937.

pounds. On about one-fourth of the routes the rate was the same for all shippers, but on the others there were 2 or more rates. Three of the routes had 7 different rates. These variations are due apparently to distance, service, volume, type of road, and other factors; and, according to the association, are amply justified in most cases. (See table 25.)

About 71 trucks were used regularly on the 58 routes, each hauling milk for about 16 producers. The number of shippers was less than 10 on only 12 truck routes and more than 20 on 16 routes. The average volume of milk per truck was 3,600 pounds per day, giving each trucker a daily gross income of about \$8.

Hauling conditions in the Louisville milkshed are not greatly different from those around other markets in the area studied. Among eight markets on which data are available (see table 26) the hauling rate in the Louisville area was the fourth lowest. The number of producers per truck was relatively low in Louisville, but the average volume of milk per truck was high, and thus fewer stops were necessary to a load.

TABLE 26.—MILK HAULING CONDITIONS IN SELECTED MARKETS IN THE FOURTH FARM CREDIT DISTRICT

Market	Year	Average rate per 100 pounds	Average distance to market	Producers per truck	Daily volume per truck
		Cents	Miles	Number	Pounds
Louisville	1937	22.7	26.3	15	3,600
Chattanooga	1937	25.0	40.0	14	3,000
Indianapolis	1937	24.0	25.0	30	3,000
Fort Wayne	1937	25.0	20.0	30	3,000
Akron	1935	20.3	18.2	36	4,200
Columbus	1935	21.0	18.4	18	2,000
Dayton	1935	26.6	16.9	42	3,200
Portsmouth	1935	16.5	13.7	22	2,900

Source of data: Louisville data are from records of the Falls Cities Cooperative Milk Producers' Association. Data for Chattanooga, Indianapolis, and Fort Wayne are based on estimates of association managers at those points. Data for Akron, Columbus, Dayton, and Portsmouth are from "Milk Cooperatives in Four Ohio Markets," Farm Credit Administration Bulletin 16, 1937, by Wm. C. Welken and T. G. Britts.

One phase of the milk-hauling system in Louisville which does not appear to be as efficient as might be desired is the unloading of trucks in the city. For 13 of the 58 routes the milk is unloaded at the plants of 5 or more dealers; for only 11 is all the milk unloaded at one plant. The reason is that producers select their own dealer, whereas they do not have a similar choice of haulers. Efforts are being made to increase efficiency in unloading, and the number of trucks unloading all milk at one plant is steadily increasing. Some of the dealer-producer affiliations are of long standing, however, and must be considered when changes of this type are being made.

Herd Improvement

The newest service activity of the Falls Cities cooperative is the encouragement, financially and otherwise, of dairy herd-improvement associations among its members. The cooperative's work has involved help in organizing new associations and paying one-half or more of the cost for the first year for each member who joined a dairy herd-improvement association. In other words, of the total cost of \$30 or \$36 per year for each member, the Falls Cities paid \$18. Close to \$1,650 was spent in this way during the year ending January 31, 1938. This work had just started when the study was made, but more recent reports indicate that nine new herd-improvement associations have been formed. There were already two of these associations in the area, and the total membership now represents a substantial proportion of the Falls Cities members.

Other Service Activities

In the opinion of its members the Falls Cities association performs an important service by "representing the farmers' interests in the market." That is, the association acts as a representative of individual producers when called upon in connection with miscellaneous milk-marketing problems, and as a representative of all producers in matters of State and national legislation affecting the dairy industry. It also serves in connection with hearings and other matters pertaining to milk-control programs, and assists members during emergencies brought on by adverse weather conditions such as the flood in 1937.

The Falls Cities association is a member of the National Cooperative Milk Producers Federation, the Kentucky Cooperative Council, the Kentucky Farm Bureau Federation, and one or more local trade organizations. The first of these maintains headquarters in Washington, D. C., and in addition to its work with legislative matters, performs a valuable educational service. The program of the Kentucky Cooperative Council is largely educational. The Farm Bureau has

always worked closely with the association on matters of general interest to producers. Interviews with producers, as described in a later section of this bulletin (see pp. 65-66) indicate that this general representation of their interests appeals to them as a particularly worth-while part of the association's work.

Membership Relations Program

THE THIRD major part in the Falls Cities' general program is designed to give members full current information about the market and the association. The purposes of this work are: (1) To perform an information service for members; (2) to increase the ability of members to control the association in an intelligent manner; and (3) to create an understanding of and an interest in the association's problems.

The following excerpts from a special letter to all members on January 10, 1935, illustrate the extent to which association officials recognize the importance of this work: "As an association we can attain the ends that you and I strive for through a sympathetic understanding between the membership and the management * * *. We contemplate having a series of meetings in the very near future * * * (for the purpose of) * * * going over informally the stumbling blocks that confront us. We invite your comments and suggestions as to our best method of meeting them. The strength of our organization lies in the information and understanding of our membership * * *."

The means used by the association in presenting information to create this understanding and give members a chance to help determine association policies, include: (1) An association paper or magazine each month; (2) an annual central meeting and local meetings of members in various parts of the milkshed; (3) visits to members' farms by fieldmen and officers; and (4) visits to the association office by members. These are listed here about in the order of their importance, as measured by the time and money spent and by the extent to which the entire membership is reached.

Monthly Magazine

The Falls Cities Cooperative Dairyman has been published monthly and sent to every member since December 1931. It covers such matters as market conditions, prices, sales, receipts, changes in association policy, announcement of meetings, and general association news. Articles are included on matters of State and national scope affecting dairymen; one page is devoted to women's interests; one to laboratory and service work; and one to editorials. Numerous articles are included each year on feeding practices and other matters pertaining

to milk production. Advertisements are printed for members free of charge. There are no other advertisements except for the disinfectant and fly spray made by the association.

This magazine has been supplemented by some 20 letters to members sent out from time to time. Most of these deal with special events. On the whole, however, the magazine has been the principal channel for information. The membership agreement authorizes an annual deduction of 25 cents per member in payment for a subscription to the Cooperative Dairyman.

Meetings of Producers

The central meeting in Louisville on the third Wednesday in February and one or more meetings each year in the 19 local units afford opportunities to improve membership relations. A report on the year's operations and the election of officers constitute the main business at the Louisville meeting, with major attention to plans for the coming year. Approximately 25 percent of the members, some with their families, usually attend the annual meeting.

The local unit meetings, usually two a year in each local, are devoted to detailed discussions of particular problems and offer opportunities for intimate contact between the management and the members. All these meetings are attended by someone from the association office. Programs are outlined in advance to cover special problems of current interest such as hauling, herd improvement, and milk control.

According to association officials, the local meetings are not well attended because some members lack interest in the problems under discussion. When there is no major issue involved and market conditions are satisfactory, it is difficult to obtain a large attendance. Of the producers interviewed, about 55 percent indicated that they attended the annual meeting, and 44 percent that they attended all local meetings.

The milkshed territory is divided into 14 districts for purposes of nominating a director every 3 years, but the district meetings for this purpose are not the same as the local meetings held more frequently in the 19 local units. Since 1935, however, the presidents and secretaries of each local unit have comprised an advisory council which meets in Louisville four times each year to discuss market conditions and the work of the association with the officers and directors. The producer meetings, therefore, give the producer several chances to express himself regarding the association: (1) Through comments and suggestions at all local and annual meetings; (2) by a vote on directors at each annual meeting; (3) by a vote in nominating his district director; and (4) by his votes in electing the local-unit officers each year.

Visits to Members' Farms

Field visits to the farms of members are usually made for a specific reason other than general contact or educational purposes, but they are none the less important in building membership relations. At the time of this study, directors and local officers were visiting members to have them sign a new membership agreement. The regular field man and the full-time secretary of the association were helping in this work and were also soliciting new members. Two of the laboratory employees and the field man make a number of farm visits each year in connection with requested laboratory services. According to the producers interviewed, 94 out of 227 farms—or over 40 percent—were visited during the year ending in the summer of 1937.

Visits to Association Office

More than half of the producers interviewed, exclusive of officers and directors, reported one or more visits to the association office in Louisville in the previous 12 months. Most of the visits were for a specific purpose, but the personal contact results in more complete information and builds a better understanding between the member and the association.

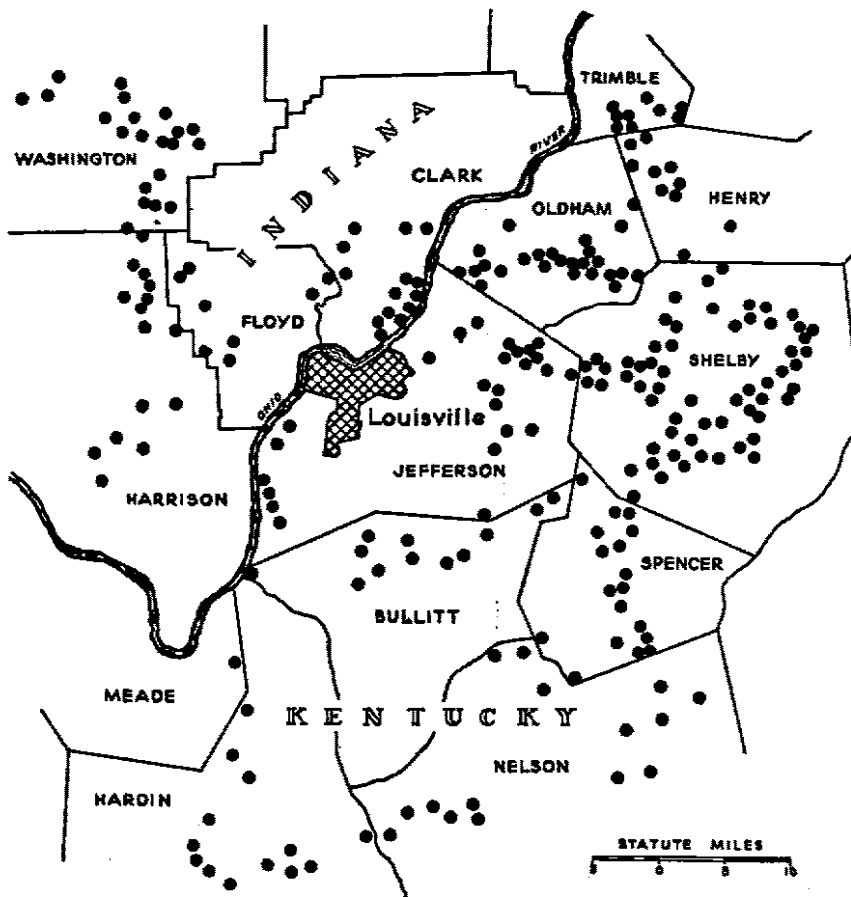
Many of the milk-truck drivers call at the association office on matters affecting the members on their routes. Every effort is made to maintain harmonious relations between the association and the haulers, because in visiting each farm every day the haulers are a potential asset to the association's membership relations. A clause in the hauling contract provides that the haulers will make no statements that may injure the reputation of the association, and will not solicit changes in distributors on the part of producers.

Appraisal of Falls Cities Association by Members

ANY cooperative enterprise is essentially a joining of common interests to attain some common objectives. It is important that the management have at all times an understanding of the attitudes of the members toward the objectives set up and the degree of success in their attainment, as these facts have a direct bearing on the support that may be expected for the association's program. With this in mind those conducting the survey visited 227 members of the association asking each of them some 100 questions regarding their reactions toward various phases of the association's work.

The members interviewed were selected from all parts of the association's area, with a view to obtaining a fair cross section of opinion. (See fig. 16.) Contacts were made also with nonmembers and with members of the Independent Association, but their answers were not suited for tabulation, because they failed to indicate clearly which association was being appraised. Many of the members of the Independent Association had been members of the Falls Cities Association, and both these and the nonmembers expressed themselves freely concerning its work.

LOCATION OF FARMS OF PRODUCERS INTERVIEWED



Each dot represents one producing farm

FIGURE 16

Visits were made to 277 producers, representing 293 producing units, in the territory of the Falls Cities Cooperative Milk Producers Association, in 1937.

Characteristics of Producers Interviewed

A total of 277 producers, representing 293 producing units, were visited. These were distributed among 29 separate milk dealers, over 58 of the 60 hauling routes, and over 13 of the 16 counties in the supply area. Between the 2 States and the major counties, the distribution of producers interviewed was not greatly different from the distribution of milk shipments to market. (See table 27.) Every effort was made to obtain a reliable measure of producer opinion by assuring each producer that the answers would be strictly confidential and by refraining from asking questions in a leading manner.

With the idea of making cross tabulations which might indicate to some extent the reasons for approval or disapproval of specific phases of the association's work, numerous questions were asked regarding location and size of farm, size of herd, daily volume of milk, experience with cooperative associations, tenancy, membership in other farm organizations, and years of shipping whole milk. Although the cross tabulations proved of little significance, the answers to these questions present an interesting description of production conditions and of variations among producers.

A total of 293 grade B milk producing units was represented by the 277 producers. The average size of farm was 210 acres, the average size of herd slightly over 18 cows, and the daily milk shipments per

TABLE 27.—DISTRIBUTION BY STATES AND COUNTIES OF PRODUCERS INTERVIEWED DURING THE STUDY AND OF MILK SHIPMENTS TO LOUISVILLE, KY., YEAR ENDING JUNE 30, 1937

State and county	Members of Falls Cities Cooperative Milk Producers' Association	Members of Independent Association	Non-members	Total producers interviewed	Percentage of total producers interviewed	Percentage of milk supply received from indicated county
	Number	Number	Number	Number	Percent	Percent
Kentucky:						
Shelby.....	42	12	16	70	25.3	22.0
Jefferson.....	30		3	33	11.9	15.0
Oldham.....	31	6	4	41	14.8	11.0
Spencer.....	13	3	1	17	6.1	8.5
Bullitt.....	9	2		11	4.0	8.9
Hardin.....	11			11	4.0	5.3
Henry.....	11			11	4.0	3.9
Nelson.....	15	1		16	5.8	2.8
Trimble.....	9			9	3.2	.8
Meads.....						.6
Total.....	171	24	24	219	79.1	77.7
Indiana:						
Clark.....	15		1	16	5.8	9.5
Washington.....	19			19	6.8	5.2
Floyd.....	6		1	7	2.5	3.4
Harrison.....	16			16	5.8	3.2
Scott.....						.8
Jefferson.....						.2
Total.....	56		2	58	20.9	22.3
Market.....	227	24	26	277	100.0	100.0

Source of data: Information obtained from the market administrator, Louisville, Ky.

farm about 40 gallons. The average distance to market was reported as 26 miles and experience as a whole-milk shipper averaged almost 14 years. (See fig. 17.) More than 75 percent of the producers were full owners of their dairy farms. About 50 percent belonged to other farm organizations.

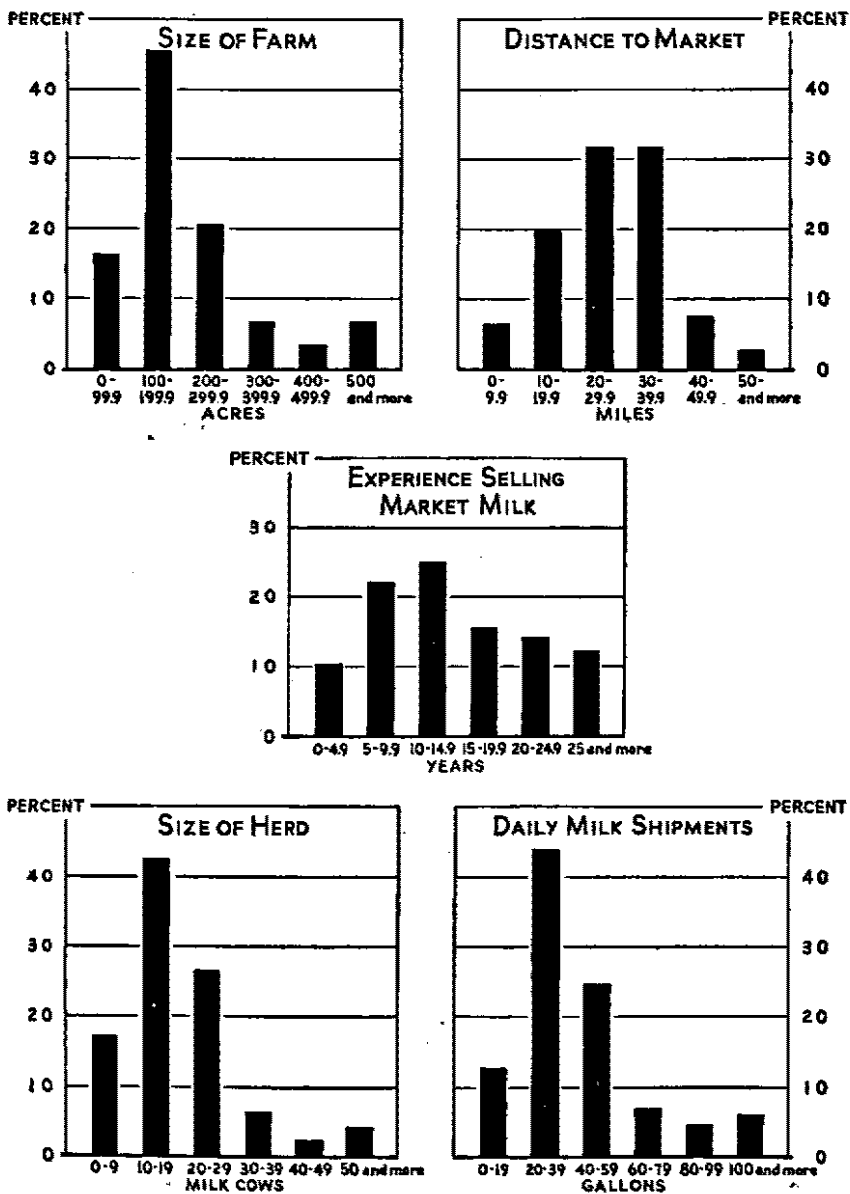


FIGURE 17.—PERCENTAGE DISTRIBUTION OF PRODUCERS INTERVIEWED ACCORDING TO SIZE OF FARM, SIZE OF HERD, AND OTHER FACTORS, LOUISVILLE, KY., 1937.

More than 75 percent of the Falls Cities members interviewed has belonged to the association since its beginning. Less than 10 percent had any previous experience as a member of a milk cooperative, and less than 10 percent had been Falls Cities members for less than 2 years. Of the Independent Association, about 80 percent of the members interviewed had been members of the Falls Cities association. The average length of membership in the Independent Association was only about 2 years. About 60 percent of the nonmember producers who were visited were formerly members of the Falls Cities Association.

The remaining discussions in this section refer to the replies given by the Falls Cities members. Among them the answers were mostly of a rather definite nature, well suited to tabulation. On only a few questions was a high percentage of the answers indefinite, and on most of these the answer "do not know" or "do not have enough information to justify an opinion" was appropriate. Among the independents and nonmembers, on the other hand, about 45 percent of the producers answered "do not know" or gave no answer to each of the questions calling for a straight "yes" or "no" answer. Little of the analysis, therefore, relates to the reactions of any except Falls Cities members.

General Appraisal of Association

As indicated above, most of the Falls Cities members interviewed felt that their association had improved market conditions, had been worth while, and was doing a better job as it grew older. Only about one-third of them felt that it had failed to accomplish some one of the various things they expected of it.

The milk-market factors mentioned by members in their general appraisal, together with the unsatisfactory conditions before the Falls Cities was formed and the reasons given for joining the organization, are shown in table 28. The questions are listed here in the order in which they were asked. The first 4 were asked at the beginning of the interview and the other at the end, after each separate part of the association's work had been discussed. For this reason it is interesting to compare the answers to the questions (1) "what improvements have been made?" and (2) "what have been the major accomplishments?" By the end of the interview, 34 additional members were reminded of definite benefits from the association, and the number of specific answers had increased from 260 to 386—many producers listing 2 or more separate accomplishments.

Three or four factors appeared to dominate the thinking of members in their general appraisal of the association. The price level for milk was mentioned more frequently than any other factor except as a reason for joining the association. Second in importance was

TABLE 28.—MILK-MARKET FACTORS MENTIONED BY MEMBERS INTERVIEWED IN THEIR GENERAL APPRAISAL OF THE FALLS CITIES COOPERATIVE MILK PRODUCERS ASSOCIATION, 1937

Milk-market factor mentioned	Number of times mentioned as—				
	Unsatisfactory conditions before association	Reasons for joining association	Improvements in market by association	Ways in which association failed	Major accomplishments of association
Price level for milk.....	101	89	115	30	148
Producer interest represented.....	59	108	42	4	59
General market stability.....	45	49	53	1	42
Butterfat testing.....	24	.....	15	10	36
Dealer control of market.....	9	2	4	19	7
Guaranteed sales outlet.....	5	9	.....	.....	22
Accuracy of weights.....	13	4	4	.....	5
Control of surplus milk.....	1	1	9	9	5
Quality of milk.....	2	.....	8	2	11
Cooperative purchasing.....	.....	.....	.....	1	18
Hauling system.....	.....	5	1	3	5
Information on market.....	4	.....	1	.....	4
Others.....	.....	2	8	7	26
Total answers.....	283	249	360	86	386
Members answering.....	155	225	162	76	196

Source of data: Survey conducted by the authors.

the presence in the market of an agency to represent the producers' point of view and to protect the farmers' interests. Third was market stability, which apparently means a year-round market and steady prices. Fourth was the general idea of a service agency, particularly for checking butterfat tests and weights.

The association was given more credit for services at the end of the interview than at the beginning, although the nature of the questions probably influenced this to some extent. Most of the producers who indicated that the association had failed to accomplish anything they expected of it criticized its failure to take over complete control of butterfat sampling and testing, and its inability to become the dominant price-making force by completely destroying the control of the milk dealers over the market-price structure.

The place of Federal milk control in the market and its effect upon the association's activities was the subject of another general question. With the price level in the market above the prices provided in the marketing agreement in effect at the time, it is not surprising that only a relatively few members expressed definite opinions on Federal control. Only about one-third of the members interviewed were familiar enough with the effects of control to warrant an opinion. Among those who did venture an opinion, the votes were about 5 to 1 for continuance. (See table 29.) Among members of the Independent Association, 16 producers were 3 to 1 against continuance. Nine nonmembers were about evenly divided, with 5 against and 4 for continuance of the Federal program.

TABLE 29.—APPRAISAL OF THE FEDERAL MILK-CONTROL PROGRAM IN LOUISVILLE, KY., BY 227 MEMBERS OF THE FALLS CITIES COOPERATIVE MILK PRODUCERS' ASSOCIATION, 1937

Type of answer	Has control helped the market	Has control helped the association	Should control be continued in Louisville
Number of producers answering:			
Yes.....	51	51	78
Indefinite.....	151	157	134
No.....	25	19	15
Total.....	227	227	227

Source of data: Survey conducted by the authors.

Unanimity of members' opinions was not so apparent on some of the association's separate activities. More than 90 percent were definitely favorable to the association and felt that it had done a good job. This should be borne in mind in appraising membership attitudes toward more specific parts of the marketing program.

Attitudes Toward the Sales Program

Price has been shown as the most important item in the minds of members—the end product of all association work. Membership appraisal of the effectiveness of the Falls Cities association as a sales agency, therefore, should be indicated clearly by the response to a direct question: Would the price of milk in Louisville be higher or would it be lower without the Falls Cities association in the market? It was found that almost 90 percent of those giving definite answers felt that the association's influence had resulted in higher prices for milk in Louisville. Those few who felt that prices would be higher without the association thought that increased competition between dealers, the absence of association dues, or their individual bargaining ability would result in higher returns.

About 26 percent of the Falls Cities members interviewed said they were not familiar enough with the details of sales policies or methods to criticize them. Of the others, 106 members made no criticisms, and 62 members made one or more suggestions. Of the total of 79 criticisms, 22 related to the dealers' margins, 20 to the use of class prices, 19 to the general strength and firmness of the association in bargaining, 9 to the services given dealers, 6 to association finances, and 3 to methods of paying producers. Some of the suggestions were constructive and indicated considerable thought on the part of the producer.

Attitudes Toward Control of Surplus

Producers interviewed gave more attention to surplus-milk problems than to any other part of the sales program. This was probably

because efforts to control seasonal surplus have directly affected the producer, and because the quantity of surplus is often the reason given producers for price changes. The base-rating plan and some other surplus-control measures were live issues among the members, with opinion sharply divided.

First, producers were asked whether the association should attempt to limit the milk supply, as a part of its program to improve market conditions and increase prices. The question was interpreted as referring to both seasonal and annual surpluses of milk. The answers were as follows:

	<i>Members replying</i>
Answers to question: Should the association try to limit supply?	
Yes.....	134
No.....	72
Indefinite.....	21
Total.....	227

Almost one-third of the members apparently felt that any efforts along this line were wrong. The few who gave reasons for their negative answer either felt rather keenly that it was none of the association's business or that the price level alone should be the controlling factor.

About half of those who favored making an effort to limit volume made some suggestion as to the method which should be used. Their suggestions may be summarized as follows:

	<i>Members replying</i>
Suggested method:	
Use a base-rating plan.....	18
Take new shippers only as needed.....	10
Educate producers as to market needs.....	9
Pay lower prices to summer shippers.....	7
Reduce or limit number of cows per farm.....	6
Place distance limit on milkshed.....	6
Others.....	10
Total.....	66

The answers to more specific questions along this line indicate that the members interviewed do not agree on methods which have been used by the Falls Cities association or were suggested by the questions. (See table 30.) Of those who gave definite answers, only 38 percent like the base-rating plan and felt that it helped them, although 57 percent thought it helped the market and 66 percent thought it limited production. This substantiates the previous analysis of the base-rating plan (p. 37) which indicated that even though it accomplished its purpose to some extent, it was the source of so much irritation and ill will among producers as to make its further use inadvisable.

TABLE 30.—REACTIONS OF 227 MEMBERS OF THE FALLS CITIES COOPERATIVE MILK PRODUCERS' ASSOCIATION TO THE BASE-RATING PLAN AND OTHER METHODS OF CONTROLLING SURPLUS MILK, 1937

Question	Nature of answers by members				
	Members answering			Percentage of definite answers	
	Yes	Indefinite	No	Yes	No
	Number	Number	Number	Percent	Percent
Did you like the base plan.....	76	37	124	34.0	62.0
Did the base plan help you.....	79	27	121	39.6	60.6
Did the base plan help the market.....	97	58	72	57.4	42.6
Did the base plan limit production.....	110	61	86	66.3	33.7
Should association limit the supply area.....	106	77	45	70.0	20.0
Should association exclude new shippers.....	62	77	88	41.3	56.7
Should association operate a surplus plant.....	82	71	74	52.6	47.4

Source of data: Survey conducted by the authors.

The members were almost equally divided on the question of an association-operated surplus milk plant. A large number of them were undecided. They opposed by a 3 to 2 margin trying to limit milk receipts by excluding new shippers, but favored by more than a 2 to 1 margin efforts to place a distance limit on the milkshed. The quality program and association control of hauling probably operate to effect a limit to some extent.

The reasons given for approval or disapproval of the base-rating plan were mostly the smallness of the producer's base assignment in relation to his total milk production. As indicated earlier (see p. 36), the base-rating plan merely distributes the total sales returns; if it results in a higher return to some producers, it must lower the returns to others. Naturally, those whose returns are lowered oppose the plan, particularly if they find it impracticable to produce more evenly throughout the year. When the reactions to the plan were cross-tabulated with volume per day, only the group shipping over 80 gallons per day showed a majority favorable to the plan. Even in this group the proportion favorable was slightly below 60 percent of the total.

Financial Reserves and Other Problems

Only 19 of the 227 members were opposed to a liquid cash reserve for their association. An equal number of members were undecided, and the other 189 thought a reserve necessary. Less than half of these suggested an amount, with suggestions ranging from \$2,000 to \$100,000 and averaging \$25,000.

Ten different needs for a reserve were given by 172 members, giving 295 individual answers. The needs listed were as follows: Emergencies 144, guarantee of payments 73, general conduct of business 15, support of credit rating 15, building of a surplus plant 14, strengthening bargaining position 13, cooperative purchasing 13, legislation 4, advertising 2, and butterfat testing 2. Five producers suggested that

the reserve could well be on a revolving basis. This question was not raised among other producers, because no special deduction is made for the reserve, and the amount needed has not yet been accumulated.

Two other phases of the sales problem were touched upon by specific questions—the dealer's margin or spread, and the extent to which farmers are given a voice in milk prices. Many of the general criticisms of sales methods offered by members related to these points. On the first question, opinion was 3 to 1 that the association had increased the farmers' share of the retail price for milk. Out of 227 producers, 133 answered "yes," 42 answered "no," and the other 52 were undecided. This view is substantiated by the analysis of market data. (See table 20).

An even greater proportion felt that the Falls Cities had served to give farmers a part in determining milk prices in Louisville. Only 21 of the 227 members answered "no" to this question, 9 were undecided, and the other 197 answered "yes."

From these various questions on the sales program, it appears that less than 10 percent of the members are definitely critical of the results obtained. A much greater proportion find fault with some of the methods which have been used and appear to be somewhat disappointed in the results, but only 10 to 20 members out of 227 believe that no progress has been made by the association.

Appreciation of Laboratory and Service Work

The 198 members who listed any kind of services rendered by the association gave more than 560 individual replies which are sum-

TABLE 31.—SERVICES RECEIVED FROM FALLS CITIES COOPERATIVE MILK PRODUCERS' ASSOCIATION AND SUGGESTIONS FOR CHANGES, AS LISTED BY MEMBERS INTERVIEWED, 1937

Nature of service	Number of members listing service		
	Received	To be added	To be discontinued
Butterfat testing.....	134	31	3
Checking milk weights.....	66	2	.....
Cooperative buying of supplies.....	79	2	1
Cooperative buying of feed.....	44	2	1
Daily sale of milk.....	73	.....	.....
Guarantee of payment.....	14	2	.....
Quality and laboratory work.....	26	3	2
Herd-improvement work.....	26	3	2
Emergency help to members.....	21	.....	.....
Higher milk prices obtained.....	26	2	.....
Farmers' interests represented.....	16	.....	.....
Control of milk dealers.....	6	2	.....
Control of surplus milk.....	3	3	.....
Control of hauling system.....	8	1	.....
Market information furnished.....	6	1	.....
Miscellaneous.....	12	10	2
Total replies.....	562	63	11
Members replying.....	198	52	11

¹ These answers suggested "more service," "better service," or "quicker service" for the most part.

Source of data: Survey conducted by the authors.

marized in table 31. About 115 of the answers really referred to the association's sales work, but this is not surprising nor entirely wrong in a strictly bargaining association. About 250 of the answers related to the laboratory and quality work, 123 to cooperative purchasing, 21 to the emergency help given during flood and drought periods, and the others to miscellaneous services.

Suggested changes in the service program related mostly to butterfat testing, cooperative purchasing, and quality improvement. The new program for herd improvement came in for some attention; 26 members listed it as a service, 3 suggested more attention to it, and 2 suggested less attention to this type of work.

Butterfat Testing

Although butterfat testing has been a live issue in the market, and the association management is not entirely satisfied with its checking of tests, only 33 out of 227 producers indicated that the present arrangement was not satisfactory. Of the other producers interviewed, 172 were satisfied with the existing test procedure. Only 93, however, believed that the association's check-testing work had resulted in greater accuracy, and 81 indicated that they could see no change. Thus, many of this group of 81 apparently felt that the arrangements were satisfactory before the association began its work. The 53 producers who answered "don't know" were technically correct because there is really no way to determine how nearly accurate the tests were before the work was started.

Approximately 20 percent of the members seen made some comment or suggestion with reference to the testing program. Almost half of these merely stated that they believed the tests on the basis of which they were paid were not accurate, 14 suggested that the association should check the dealers' tests oftener and more closely, 6 felt that the expense of checking tests was not warranted in view of the results obtained, and 2 wanted the association to do all testing instead of merely checking dealers' tests. There appeared to be little recognition, except among the officers, of the fact that the State requirement for basing the test on a sample made up of some of each producer's milk each day would make complete association control of butterfat testing impracticable.

Quality Work

The Falls Cities association is given surprisingly little credit by members for its work on the health-ordinance and quality problems. Almost two-thirds of the 227 members visited stated that the association had done nothing to help them meet the ordinance requirements or to improve the quality of their milk. Only 60 gave the association

credit for such assistance. This reaction is the more surprising as 208 of the 227 members expressed themselves as in favor of the health ordinance.

There may be several possible reasons for this reaction. The question may have been interpreted as referring to help in meeting the basic requirements of the ordinance in the beginning and not to later assistance with quality problems. Another possible reason is that the milk inspectors of the health department visit the farms at regular intervals and producers are inclined to connect them, rather than the association, with quality problems. A third possible reason is the nature of the help given by the association in meeting the health requirements when they first became effective. The association's general policy toward the ordinance in 1931 was not clearly defined; its laboratory and field service work were not fully established; and its major contributions in the beginning were efforts to have the costs of administration shifted to the dealers and to have the effective date delayed so as to give producers more time to make necessary changes. The association was successful in both these attempts, but only one producer mentioned the fact that the costs of administration were shifted to dealers, and only four that the association helped to delay the effective date of the health ordinance. They were more directly concerned with having to build new milk houses and repair their barns.

About half of the members who said the association had helped with quality problems indicated that the nature of the help was in meeting the initial requirements. The others referred to help in keeping "on grade" through the laboratory and field service.

The impression from the interviews with producers was that there was much dissatisfaction during 1931 and 1932 with the new health ordinance and many objections to the required changes. By 1937, however, 208 out of 227 thought the ordinance was a good thing, and the few who felt otherwise were apparently influenced by the fact that their milk had been degraded one or more times. Many of the producers favoring the ordinance indicated that some phases of its enforcement were objectionable at times.

The first reactions of producers to the new health ordinance are undoubtedly explained by the heavy costs incurred in meeting its conditions. Averaging \$413 per farm, these costs ranged from nothing to \$8,000. A few farms were already equipped, apparently; and, on the other extreme, a few producers chose this time to build completely new barns and buy all new equipment. According to the study, 213 out of 227 had to make one or more changes in their buildings or equipment. The nature of the changes and the number of members reporting each are shown in the following tabulation:

Nature of change in building or equipment:

	Number of members reporting
Dairy barn:	
Concrete floor.....	112
More window space.....	29
New milking stalls.....	31
Entire new barn.....	18
Other changes or repairs.....	57
Milk house:	
Built new.....	180
Repaired.....	9
Improved water supply.....	28
Improved sanitary conditions.....	28
New equipment:	
Cooler or refrigerator.....	55
Wash vat or tank.....	14
Other equipment.....	52
Total changes.....	610
Members reporting.....	213

Cooperative Purchasing

The service of the Falls Cities association in cooperative purchasing of feed and supplies is widely used and appreciated by members. In the 12 months before the interview, 113 out of 227 producers purchased feed and 159 purchased supplies of one kind or another through the association. The supplies purchased included milk cans, disinfectant, fly spray, strainer pads, buckets, strainers, and a variety of other items. Only 66 producers bought no supplies and 113 no feed on a cooperative basis.

All the producers visited were asked to estimate the value of their annual purchases and the amount saved by buying cooperatively. Of the 100 producers who gave a definite estimate for both savings and purchases, the purchases averaged \$352 and the savings about \$42 per member, or about 12.5 percent. The value of purchases ranged from \$5 to \$6,000 per member; 22 bought \$500 worth or more. Three of these producers said they saved nothing, but among the others the estimated savings ranged from \$1 to \$500, or from 5 to 50 percent.

These figures indicate that 100 of the producers, and possibly a number of the others who did not give definite estimates, saved enough on their cooperative purchases to cover the cost of belonging to their marketing organization. Each member on the average contributes about \$33 per year in association dues, whereas the average saving on cooperative purchases for this group of 100 producers was \$42.

Improvement of Hauling System

The appraisal by members of the system for hauling milk from farm to city plants in Louisville may be summarized as follows: Of those giving definite answers, 58.3 percent said that the Falls Cities association had reduced the hauling rate, 65.7 percent were perfectly satisfied with present hauling arrangements, and 81.8 percent were opposed to association ownership and complete control of the system. The latter reaction is somewhat surprising, especially in view of the fact that the partial control now exercised has apparently resulted in greater efficiency. The attitude of producers is probably influenced by loyalty to private haulers and apprehensions as to the amount of capital required for association ownership.

To the question "Has the association done anything to reduce hauling rates," 105 answered "yes," 75 answered "no," and the other 47 gave indefinite answers. In this indefinite group, 10 indicated that the rate was lower but that the reduction was not the result of anything the association had done. Three said that the rate had increased and 6 said that the rate was the same as before. Those who felt that the association had been responsible for rate reductions listed the following means used: (1) Consolidating and reorganizing truck routes, (2) bargaining for lower rates, (3) using competitive bids to select haulers, (4) leasing the trucks so as to avoid payment of a mileage tax, and (5) generally improving the hauling service.

Less than one-third of the producers had any suggestions for improvement of the hauling system. Some of these, however, made more than one suggestion.

Nature of improvement needed:	<i>Number of members making suggestions</i>
Better trucking equipment.....	26
Better service from haulers.....	21
More efficient routing.....	17
Lower rate structure.....	15
More association control.....	7
Total.....	86
Total members.....	70

The outstanding result of this question, however, is that 134 members had no suggestions to make, and that in answer to a supplementary question 162 were opposed and only 36 in favor of complete ownership and control of milk hauling.

One of the weaknesses in the present hauling system—that is, the unloading of milk at dealers' plants in the city—is greatly influenced by the fact that a majority of the producers believe that they select their own milk dealer and that they should continue to do so. Only 10 producers out of 227 indicated that selection of a dealer was of no significance to them, and 12 producers thought it should be a joint

responsibility of the producer and the association. More than 75 percent of the others believed that the producer should be allowed to make his own selection.

The many reasons advanced for the opinion that choice of dealer should remain with the producer were mostly to the effect that it gave the individual some voice in the market and kept him better satisfied. Those who favored letting the association assign the producer to any dealer recognized that the assembly system could be made more efficient by doing this, and that with guarantee of market and of pay it really made no difference which dealer received the milk. In connection with this question, office records showed that 556 out of 1,008 members had not changed dealers since they joined the association. Almost one-fourth, or 233 producers, had changed 1 time, 118 had changed 2 times, and 101 had changed 3 times or more. One producer had changed 11 times.

Other Service Work

The only other direct question asked concerning any service activity had to do with association guarantee of payment for milk. As indicated earlier, hypothetically the association does not guarantee payment, but as a practical matter it has done so. The cost has been very small so far, with only one or two minor instances when a dealer was not able to pay for his milk. In response to a direct question, "does the association guarantee your pay," 130 producers answered "yes," 36 answered "no," 47 answered "don't know," and 14 producers stated correctly that the association had not specifically agreed and was not legally bound to do so, but that they were sure it would pay for their milk if the dealer did not. In other words, 4 out of 5 members gave the association credit for assistance along this line.

Most of the other work of the association which involves service to members is done primarily for another purpose, or it is of such a general nature that its effectiveness cannot be measured. Some producers commented favorably on the general assistance given them during emergencies such as the flood early in 1937. Also many producers mentioned the monthly paper and the field visits.

Results of Membership Program

The most reliable measure of the effectiveness of the association's work in membership relations should be found in a comparison of the opinions of members regarding the sales and service work with the results of an analysis of office records (p. 42). When the association has devoted much attention to the marketing system and has apparently made changes beneficial to producers, yet is not given credit for such improvements by its members, the work in membership

relations has been ineffective to this extent. If many members fail to understand the reasons for certain activities of the association, this may also indicate weakness in the program for membership education. It should not be expected, however, that each member should be fully familiar with all the details of management and sales methods.

The above comparison for the Falls Cities association warrants the conclusion that on questions of major importance the members appear to be well informed, are loyal to the association, and are able to appreciate the nature of its problems as well as the job that has been done. Their appraisal of the association's results coincides rather closely with the findings from the analysis of market records.

Many members fail to understand fully the basis of class prices and the necessity for selling any grade B milk at surplus prices. They do not realize the responsibility which rests upon their association for the maintenance of sound price levels. The members, as a rule, appreciate the need for surplus control but many are properly critical of some of the methods which have been or might be used. On quality and hauling problems, where some of the association's work was general in character and had been accomplished 5 or 6 years before, many producers did not know of the work and gave the association no credit for such assistance.

In a similar study in Ohio it was found that members tend to forget the improvements in certain market conditions as time passes¹⁰ and that it may be necessary to stress these points in the meetings and association literature in order to keep before the members the early problems and accomplishments of their organizations. This was not so apparent in Louisville, but there was either a slight tendency along this line, or an indication that the membership relations work was less effective in this earlier period.

It should be emphasized in connection with the service work of the association, that it is impossible to measure in quantitative terms the results of the association's efforts even with all the facts available. The fact that a majority of the members interviewed feel that the work has been worth while, knowing how much time and money have been spent by the association, seems conclusive in itself, both as to the value of the work and the extent to which members were kept informed.

Appraisal of Contact Methods Used

In addition to the comparisons made between actual results and the results as measured by the opinions of members, each of the producers was asked to appraise and criticize each separate part of the program of the Falls Cities in membership relations, the methods

¹⁰ Weiden, W. C. and Stitts, T. G., Milk Cooperatives in Four Ohio Markets, F. C. A. Bull. 16, 73 pp. illus., 1937.

used, and the general results. Replies to these questions also revealed the extent to which members were reached by the paper, the meetings, the field visits, and by other means.

The monthly magazine published by the association appeared to be the most effective means of giving information to members. Only 6 producers out of 227 said they did not receive the magazine each month. Of those who did receive it, 209 read it and only 12 did not. Only 9 members did not approve of having such a magazine, and 208 thought it was a good thing.

There was only a small response to the request for suggestions as to how the paper could be improved. A total of 136 producers said that it was satisfactory now. Of the 34 members who made constructive suggestions, 21 felt that it should come out earlier in the month with current statistics, 3 suggested a column for producers' letters, and 2 suggested more articles on herd management.

As indicated earlier (see p. 59) the attendance at meetings, both local and annual, left much to be desired. Out of 227 members, only 62 attended the last annual meeting and 144 attended any local meetings during the previous year. Only 64 members attended all local meetings. Those who responded to the question apparently felt that the meetings were worth while, but blamed lack of interest for the poor attendance.

Only 25 producers said the local meetings were not worth while, as opposed to 124 who felt that they were of benefit. In the order of their importance, the specific advantages listed were (1) meetings are educational and informative, (2) producers are given a chance to help control the association by voting, (3) marketing problems are settled and plans made, (4) members meet other members and benefit socially, and (5) membership interest in the association is increased.

The major suggestion for improving both local and annual meetings was to get more producers to attend. Numerous other suggestions were made, as "furnish entertainment," "have a better program," and "have a reason for meeting," but they also relate to the need for a greater attendance. With regard to the local meetings, 44 members thought the meetings were fine now and 48 suggested some improvement; only 7 offered any suggestion for improving the annual meeting; 64 stated that the meetings were satisfactory at present.

One member suggested that it would help to get the farm women interested in the association, and this general idea has been discussed on several occasions at meetings of cooperative leaders in recent years. Apparently a number of associations in other markets have been doing work along this line. The Falls Cities association has devoted a page of the monthly paper to women but apparently has not recognized them otherwise in the membership relations work.

Among the producers visited, 113 said the women in their families were interested in the association and 103 said they were not interested. A total of 99 believed it might be helpful if the women were interested, 79 felt that it would not be helpful, and 49 were undecided. Many members apparently would resent any such intrusion. Suggestions as to what the women might do included: (1) Develop the social phase of meetings and other gatherings, (2) attend local meetings, (3) take part in programs, and (4) encourage the men to take a greater interest in the association and to attend more meetings.

The other means of contact with members are field visits to producers' farms and the visits of members to the association office. It was found that about half of the members, excluding directors, come to the association office at least once a year. Field visits were made to 94 of the 227 farms during the year preceding the study. Among the producers 87.2 percent felt that the visits had been worth while, 8.5 percent felt that they had not, and 4.3 percent were undecided. The purpose of more than a third of these visits was to have the producer sign a membership agreement. The other visits were made on general business of the association or to settle specific problems as a part of the association's service program.

On the whole, it appears that although less than half of the members were reached through the membership relations work, practically all members were reached in some way, and most of the members felt that these contacts were worth while. Of those answering the questions in a definite manner, more than 95 percent were in favor of the monthly paper, more than 90 percent thought the annual meeting fine, about 80 percent felt that the local meetings were worth while, and 87 percent felt that the field visits were worth while.

In this study, 193 or 61 percent of the members questioned, felt that they were getting enough information about the association's program. Nine producers answered "do not know," and 79 producers or about 35 percent felt that the information they were getting was inadequate. It is significant, however, that in this latter group, 20 producers said it was their own fault that they did not have enough information. Three others were not getting the magazine and the others either made no comment or merely said they would like to know more about the association.

The division of producer opinion was about the same concerning the part an individual member has in determining association policies. About 63 percent felt that they did have a part, 33.5 percent said they did not, and 4 percent gave indefinite answers. In this case, however, 42 of the 76 who answered, "no," indicated that it was the fault of the producer.

Contacts with directors, votes for officers, attendance at meetings, and the willingness of the association to accept suggestions were all listed as ways in which the individual producer can have a voice in policies. Only about 12 or 15 of the members seemed to feel that they were given no chance to help control the association or that their opinions had no influence. On the whole, these reactions can only be interpreted to mean that all except a few members believe that the association is controlled by its farmer-members. This should insure the loyalty of members to the type of marketing program adopted and enhance the bargaining power of the organization.

Appendix A

Basic Statistical Data

TABLE 32.—AVERAGE PRICES FOR MILK SOLD IN THE LOUISVILLE MILKSHED FOR MANUFACTURING PURPOSES, 1925-37

Month	Price per 100 pounds for 4 percent milk †						
	1925	1926	1927	1928	1929	1930	1931
January.....	\$1.94	\$2.15	\$2.30	\$2.31	\$2.26	\$1.70	\$1.14
February.....	1.80	2.06	2.32	2.14	2.26	1.60	1.00
March.....	2.00	2.01	2.34	2.20	2.30	1.56	1.24
April.....	2.02	1.95	2.20	2.18	2.20	1.72	1.23
May.....	1.98	1.85	2.12	2.13	2.06	1.68	.90
June.....	2.05	1.85	1.67	2.07	2.00	1.41	.87
July.....	1.92	1.78	1.91	2.05	2.00	1.36	.86
August.....	1.60	1.78	1.86	2.13	1.96	1.67	1.04
September.....	1.98	1.92	1.96	2.21	2.02	1.77	1.16
October.....	2.20	1.98	2.05	2.21	2.11	1.73	1.34
November.....	2.28	2.15	2.17	2.20	2.00	1.62	1.24
December.....	2.24	2.31	2.26	2.35	1.84	1.33	1.19
Year.....	2.05	1.97	2.11	2.20	2.08	1.60	1.11

Month	Price per 100 pounds for 4 percent milk †					
	1932	1933	1934	1935	1936	1937
January.....	\$1.02	\$0.94	\$0.87	\$1.39	\$1.50	\$1.50
February.....	.90	.71	.98	1.63	1.56	1.50
March.....	.83	.64	1.07	1.43	1.40	1.56
April.....	.81	.73	.99	1.56	1.42	1.44
May.....	.76	.91	.97	1.20	1.20	1.29
June.....	.63	.88	.99	1.07	1.29	1.29
July.....	.59	1.02	1.01	1.02	1.55	1.29
August.....	.76	.81	1.11	1.08	1.73	1.44
September.....	.81	.85	1.07	1.09	1.61	1.47
October.....	.81	.86	1.11	1.14	1.46	1.57
November.....	.82	.86	1.21	1.23	1.46	1.62
December.....	.98	.79	1.23	1.47	1.47	1.70
Year.....	.81	.83	1.02	1.27	1.46	1.40

† Composed of: 70 percent of the Kentucky farm price of butterfat on the 15th of the month times 4, plus 20 percent; 15 percent of the Indiana farm price of butterfat on the 15th of the month times 4, plus 20 percent; 15 percent of the price for 2.5 percent milk at condenseries in the East North Central States plus 1/4 of the Chicago 92-score butter price.

Source of data: U. S. Department of Agriculture, Bureau of Agricultural Economics

TABLE 33.—PRICE PAID BY MILK DEALERS FOR MILK USED AS FLUID MILK AND FLUID CREAM, LOUISVILLE, KY., 1925-37

Month	Price per 100 pounds for 4 percent milk						
	1925	1926	1927	1928	1929	1930	1931
January.....	\$2.73	\$2.90	\$2.79	\$2.79	\$2.79	\$2.55	\$1.93
February.....	2.73	2.67	2.79	2.67	2.67	2.55	1.62
March.....	2.26	2.21	2.79	2.67	2.67	2.32	1.85
April.....	2.26	2.21	2.73	2.32	2.55	2.32	1.65
May.....	2.26	2.21	2.32	2.32	2.55	2.30	1.83
June.....	2.15	2.21	2.21	2.32	2.55	2.21	1.84
July.....	2.26	2.21	2.21	2.35	2.55	2.21	1.67
August.....	2.26	2.21	2.26	2.32	2.55	2.55	2.19
September.....	2.26	2.21	2.32	2.55	2.55	2.55	2.20
October.....	3.06	2.26	2.54	2.55	2.55	2.55	2.19
November.....	3.06	2.67	2.79	2.79	2.55	2.20	2.20
December.....	2.90	2.79	2.79	2.79	2.55	2.20	2.19
Year.....	2.55	2.40	2.55	2.54	2.50	2.38	1.9

Month	Price per 100 pounds for 4 percent milk					
	1932	1933	1934	1935	1936	1937
January.....	\$1.74	\$1.95	\$2.00	\$2.24	\$2.18	\$2.95
February.....	1.73	1.95	2.08	2.23	2.18	2.97
March.....	1.74	1.86	2.06	2.24	2.17	2.92
April.....	1.73	1.85	2.07	2.23	2.17	2.78
May.....	1.73	1.84	2.06	2.23	2.18	2.58
June.....	1.85	1.85	2.07	2.23	2.28	2.52
July.....	1.96	1.95	2.07	2.22	2.62	2.53
August.....	2.05	2.04	2.07	2.23	2.93	2.50
September.....	2.05	2.05	2.06	2.23	2.92	2.64
October.....	2.05	2.05	2.06	2.23	2.93	2.65
November.....	2.05	2.07	2.23	2.22	2.93	2.64
December.....	2.00	2.00	2.25	2.22	2.93	2.64
Year.....	1.89	1.96	2.10	2.23	2.54	2.70

Source of data: U. S. Department of Agriculture prices (Monthly Fluid Milk Report, Market News Service), 1925-31, weighted average of association prices for class I and class II milk, 1931-37.

TABLE 34.—RETAIL PRICE OF MILK DELIVERED TO HOMES IN LOUISVILLE, KY., 1925-37

Month	Cents per quart						
	1925	1926	1927	1928	1929	1930	1931
January.....	13	14	13	13	13	13	12
February.....	13	13	13	13	13	13	11
March.....	13	12	13	13	13	12	10
April.....	12	12	13	12	13	13	10
May.....	12	12	12	12	13	13	11
June.....	12	12	12	12	13	12	11
July.....	12	12	12	12	13	12	11
August.....	12	12	12	12	13	13	12
September.....	12	12	12	13	13	13	12
October.....	14	12	12.5	13	13	13	12
November.....	14	13	13	13	13	12	12
December.....	14	13	13	13	13	12	12
Year.....	12.67	12.42	12.54	12.58	13	12.42	11.33

Month	Cents per quart					
	1932	1933	1934	1935	1936	1937
January.....	10	10	11	12	12	14
February.....	10	9.5	11	10	12	14
March.....	10	9	11	11.5	12	14
April.....	10	10	11	12	12	12.5
May.....	10	10	11	12	12	13
June.....	10	10	11	12	12.3	13
July.....	9.5	10.5	11	12	13	13
August.....	10	11	11	13	14	14
September.....	10	11	11	12	14	14
October.....	10	11	11	13	14	14
November.....	10	11	11.9	12	14	14
December.....	10	11	12	12	14	14
Year.....	9.96	10.33	11.16	11.75	12.94	13.71

Source of data: U. S. Department of Agriculture Market News Service.

TABLE 35.—SPREAD BETWEEN PRICES FOR FLUID MILK AND CREAM AND FOR MANUFACTURING MILK, LOUISVILLE, KY., 1925-37

Month	Cents per 100 pounds						
	1925	1926	1927	1928	1929	1930	1931
January.....	70	75	49	68	68	80	79
February.....	93	61	47	63	41	96	36
March.....	29	30	45	47	37	78	81
April.....	24	26	44	14	35	60	62
May.....	28	35	20	19	46	67	94
June.....	10	36	34	25	55	80	97
July.....	45	43	30	29	55	83	99
August.....	45	43	40	21	57	83	115
September.....	40	30	33	34	53	78	104
October.....	58	28	49	34	44	82	85
November.....	80	52	62	50	55	86	96
December.....	66	48	58	44	71	87	100

Month	Cents per 100 pounds					
	1932	1933	1934	1935	1936	1937
January.....	72	101	142	85	68	148
February.....	93	124	110	80	62	147
March.....	91	124	191	81	77	137
April.....	92	112	108	73	75	124
May.....	105	93	109	103	98	120
June.....	122	97	108	115	102	112
July.....	139	98	105	120	107	114
August.....	129	123	96	120	120	115
September.....	124	120	99	114	131	117
October.....	124	119	95	109	145	108
November.....	122	121	102	89	144	102
December.....	102	130	102	75	145	96

Source of data: See tables 32 and 33.

TABLE 36.—INDEX NUMBERS OF PRICES OF OTHER FARM PRODUCTS IN THE LOUISVILLE MILKSHED, 1925-37

[1925-27=100]

Month	1925	1926	1927	1928	1929	1930	1931
January.....	110.0	104.4	90.5	109.1	124.2	110.4	79.4
February.....	107.2	105.9	89.2	107.6	128.1	108.5	71.5
March.....	105.7	101.4	85.2	106.0	126.6	103.4	73.1
April.....	104.5	108.0	85.4	108.7	125.2	102.6	72.9
May.....	105.2	105.0	94.5	114.3	126.3	99.4	69.9
June.....	105.2	104.5	85.1	112.3	128.4	98.5	67.0
July.....	108.0	101.1	86.7	112.7	129.4	92.9	64.2
August.....	110.7	97.7	87.8	112.8	128.2	90.7	55.4
September.....	108.0	100.0	90.5	115.4	128.1	95.8	62.7
October.....	106.9	101.2	82.8	112.3	127.9	94.5	61.5
November.....	111.5	102.7	93.9	109.8	127.4	94.2	62.7
December.....	112.8	102.6	93.8	111.0	128.4	90.2	60.7
Year.....	108.1	102.0	89.0	112.5	127.1	98.5	67.4

Month	1932	1933	1934	1935	1936	1937
January.....	45.2	49.4	50.7	79.9	89.2	123.1
February.....	43.1	45.9	53.7	82.6	89.5	122.5
March.....	42.5	45.8	54.0	82.5	85.5	124.5
April.....	42.5	47.6	52.8	84.2	85.1	125.5
May.....	40.9	52.0	52.3	84.9	85.5	124.9
June.....	40.1	51.8	53.1	84.2	89.5	124.2
July.....	43.4	56.2	52.9	82.3	89.7	126.4
August.....	44.4	54.6	55.8	87.3	92.4	128.4
September.....	45.0	55.2	51.3	89.5	92.6	126.0
October.....	43.9	55.4	58.9	89.0	92.5	129.9
November.....	44.8	55.5	60.5	86.1	93.4	116.6
December.....	45.7	52.2	61.2	86.5	95.2	114.1
Year.....	43.5	52.2	55.9	84.9	89.9	123.1

Source of data: Calculated by using prices received by farmers on 15th of each month as reported by U. S. Department of Agriculture and the following sales figures each month: Kentucky—225,000 bushels of corn; 200,000 bushels of wheat; 290,000 bushels of potatoes; 18,000,000 pounds of tobacco; 1,450,000 dozens of eggs; 67,000 hundredweights of hogs; 40,000 hundredweights of lambs; and 155,000 hundredweights of cattle. Indiana—365,000 bushels of corn; 295,000 bushels of wheat; 2,250,000 dozens of eggs; 87,000 hundredweights of hogs; 80,000 hundredweights of cattle.

TABLE 37.—INDEX NUMBERS OF FEED PRICES IN LOUISVILLE, KY., 1931-37

[1932-36=100]

Month	1931	1932	1933	1934	1935	1936	1937
January	137.2	66.9	68.4	84.6	135.6	103.0	164.9
February	134.0	66.2	59.6	90.2	134.3	104.0	166.8
March	135.0	67.8	62.0	95.8	128.5	104.2	171.2
April	138.0	67.6	69.0	97.0	127.2	106.2	186.0
May	130.3	64.7	80.0	90.5	128.8	106.2	183.4
June	123.8	63.6	85.8	104.3	124.7	111.0	175.2
July	114.3	62.0	90.2	107.0	119.2	138.7	163.2
August	105.8	65.6	88.8	119.4	117.3	164.6	143.6
September	92.2	66.4	83.7	103.8	110.5	168.2	129.0
October	74.2	63.0	76.2	125.0	113.8	156.7	111.6
November	75.9	59.6	83.4	128.0	105.1	150.5	98.4
December	72.0	57.7	81.6	139.4	104.2	157.8	96.8

Source of data: Based on prices as reported by the U. S. Department of Agriculture; Hay and corn in Kentucky and cottonseed meal, shorts, and gluten feed at Cincinnati, Ohio. Weights of 40, 30, 10, 10, and 10, respectively, were used in making up the index.

TABLE 38.—RECEIPTS AND SALES OF ALL DEALERS REPORTING TO THE POOL IN LOUISVILLE, KY., 1931-37¹

	Volume in millions of pounds ²												Year
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Total receipts:													
1931					10.45	9.07	8.09	8.88	7.86	7.41	7.13	7.53	
1932	8.20	7.98	8.79	9.04	11.72	9.61	8.39	8.16	7.01	7.17	6.84	7.07	100.88
1933	7.31	6.50	7.38	7.70	9.12	7.89	7.30	7.66	6.69	6.22	6.22	6.62	87.41
1934	6.68	5.87	6.57	7.71	9.15	7.95	7.54	7.64	6.87	6.84	6.28	6.42	94.93
1935	6.69	6.29	7.28	7.83	8.48	7.98	7.42	7.52	7.41	6.20	5.78	6.20	85.06
1936	6.45	6.24	7.01	7.04	8.56	7.50	7.00	7.70	7.62	7.41	6.54	6.94	86.01
1937	6.90	6.08	7.34	7.64	9.14	8.34	7.98	7.62	6.72	6.02	6.90	6.38	85.96
Class I sales:													
1931					4.97	4.50	4.36	4.10	4.08	4.26	4.07	4.02	
1932	4.27	4.21	4.55	4.43	4.53	4.20	4.31	4.10	4.10	4.26	4.06	4.12	51.14
1933	4.13	3.69	4.05	3.84	4.11	3.89	3.78	3.81	3.90	4.25	4.00	4.08	47.53
1934	4.21	3.91	4.38	4.46	4.75	4.41	4.27	4.17	4.12	4.32	4.45	4.30	51.78
1935	4.28	4.02	4.40	4.18	4.19	3.94	3.99	4.10	3.97	4.34	4.18	4.23	49.82
1936	4.21	4.04	4.44	4.31	4.47	4.32	4.38	4.28	4.20	4.36	4.16	4.28	51.45
1937	4.10	3.61	4.32	4.01	4.28	4.08	4.11	4.02	4.01	4.20	4.00	4.06	48.78
Class II sales:													
1931					1.57	1.32	.96	1.06	.96	1.13	1.11	1.15	
1932	1.11	1.22	1.16	1.25	1.26	1.00	.97	.80	.75	.85	.80	.85	12.02
1933	.77	.65	.81	.86	.96	.91	.86	.82	.80	.83	.81	.63	9.73
1934	.64	.68	.80	.96	1.13	.96	.92	.88	.86	.89	.85	.93	10.52
1935	.86	.82	.95	.94	.96	.82	.81	.80	.80	.85	.84	.91	10.40
1936	.69	.77	.92	.97	1.07	.91	.84	.79	.80	.84	.79	.84	10.37
1937	.75	.56	.90	.89	.99	.88	.82	.79	.81	.80	.79	.64	9.82
Class III sales:													
1931					3.91	3.25	2.77	3.48	2.82	2.02	1.95	2.36	
1932	2.82	2.58	3.08	4.28	5.93	4.41	3.11	3.26	2.16	2.06	1.96	2.10	37.72
1933	2.41	2.16	2.52	3.00	4.03	3.09	2.66	3.03	2.19	1.74	1.41	1.91	30.15
1934	1.58	1.28	1.39	2.29	3.28	2.56	2.35	2.59	1.89	1.03	.95	1.19	22.63
1935	1.53	1.45	1.93	2.71	3.20	3.22	2.62	2.62	2.64	1.01	.78	1.06	24.84
1936	1.41	1.43	1.65	1.78	3.02	2.27	1.78	2.63	2.62	3.21	1.50	1.82	24.19
1937	2.05	1.91	2.12	2.74	3.89	3.40	3.05	2.71	1.90	1.02	1.11	1.48	37.38

¹ See p. 34 for definition of pool.

² Adjusted to the average butterfat test of milk received and sold, and to uniform class definitions.

Source of data: Records in the office of the market administrator, Louisville, Ky.

TABLE 39.—SEASONAL VARIATIONS IN RECEIPTS, SALES, AND PRICES IN THE LOUISVILLE MILK MARKET, 1931-37

Month	Index of seasonal variation in —						
	Total milk receipts ¹	Fluid milk sales ²	Fluid cream sales ³	Surplus milk sales ⁴	Fluid milk and cream sales ¹	Market pool prices ¹	Manufacturing milk prices ¹
January.....	94.0	99.7	94.7	94.9	96.2	101.2	106.7
February.....	87.1	102.1	93.8	77.8	92.4	103.0	104.0
March.....	100.4	102.5	101.4	98.0	104.2	100.6	102.7
April.....	106.6	101.6	110.3	115.1	102.2	94.8	98.2
May.....	125.1	102.6	114.6	182.4	107.2	80.1	95.0
June.....	111.7	99.3	107.2	126.8	100.2	90.0	92.8
July.....	101.9	96.4	96.3	107.0	99.0	90.1	87.6
August.....	106.6	96.4	94.1	125.7	97.0	99.6	98.1
September.....	99.2	99.2	97.4	99.6	98.0	101.5	102.6
October.....	91.3	102.1	98.5	99.1	102.6	104.5	98.8
November.....	85.8	100.5	97.0	84.0	98.5	108.7	102.2
December.....	91.3	99.2	99.1	75.2	101.2	107.8	107.0

¹ Calculated by the use of 12-month moving averages centered.

² Based on monthly data for all dealers in the pool.

³ Based on daily average sales of 13 continuous dealers.

⁴ See table 34.

Source of data: Records in the office of the market administrator, Louisville, Ky.

TABLE 40.—ACTIVE MEMBERS OF FALLS CITIES COOPERATIVE MILK PRODUCERS' ASSOCIATION, 1931-37

Month	Number at end of month						
	1931	1932	1933	1934	1935	1936	1937
January.....		1,361	1,154	1,069	1,048	1,010	1,001
February.....		1,540	1,150	1,084	1,028	1,005	1,007
March.....		1,433	1,126	1,073	1,022	996	1,000
April.....		1,309	1,119	1,064	1,005	987	994
May.....		1,231	1,109	1,072	1,014	992	1,002
June.....		1,214	1,109	1,071	1,008	991	1,011
July.....		1,244	1,107	1,070	1,005	1,006	1,002
August.....		1,237	1,102	1,064	1,005	1,002	1,010
September.....	1,512	1,180	1,097	1,060	1,012	997	1,006
October.....	1,656	1,182	1,091	1,051	1,007	990	990
November.....	1,633	1,173	1,085	1,046	1,004	974	1,000
December.....	1,629	1,158	1,085	1,041	1,007	965	996

Source of data: Records of the association. Approximately 2,278 different producers have been members at one time or another.

TABLE 41.—NUMBER OF MILK PRODUCERS IN THE POOL, LOUISVILLE, KY., 1931-37

Month	Number at end of month						
	1931	1932	1933	1934	1935	1936	1937
January.....		1,006	1,156	1,097	1,128	1,014	1,004
February.....		1,060	1,152	1,096	1,127	997	1,000
March.....		1,488	1,138	1,078	1,128	1,005	1,079
April.....		1,416	1,122	1,068	1,148	1,004	1,012
May.....		1,315	1,114	1,072	1,076	1,000	1,044
June.....		1,222	1,109	1,144	1,072	1,007	1,045
July.....		1,229	1,108	1,137	1,004	1,029	1,039
August.....		1,240	1,105	1,155	990	1,040	1,040
September.....		1,212	1,100	1,128	1,011	1,000	1,049
October.....	1,564	1,185	1,094	1,121	1,011	1,058	1,045
November.....	1,644	1,178	1,088	1,206	1,029	1,071	1,053
December.....	1,631	1,166	1,085	1,140	1,014	1,006	1,060
Year.....		1,317	1,114	1,119	1,069	1,080	1,080

Source of data: Records in the office of the market administrator, Louisville, Ky.

TABLE 42.—DAILY MILK DELIVERIES PER PRODUCER AND QUANTITY USED FOR FLUID MILK AND FLUID CREAM, LOUISVILLE, KY., 1931-37

Month	Pounds delivered per day						
	1931	1932	1933	1934	1935	1936	1937
Deliveries:							
January.....		165	204	198	192	205	205
February.....		176	202	193	199	216	203
March.....		191	209	197	206	226	220
April.....		234	229	241	227	234	252
May.....		287	264	276	254	276	263
June.....		262	237	232	248	248	266
July.....		220	213	214	238	236	246
August.....		212	224	213	233	239	231
September.....		193	209	203	244	240	214
October.....	151	195	201	189	198	225	186
November.....	144	194	191	173	188	204	187
December.....	149	196	197	182	197	210	195
Year.....		209	215	208	220	228	224
Fluid milk and cream:							
January.....		108	137	144	148	180	144
February.....		120	135	151	153	166	139
March.....		124	138	155	151	172	156
April.....		134	140	169	148	176	162
May.....		142	147	177	156	179	163
June.....		142	144	157	148	173	157
July.....		138	135	147	154	164	154
August.....		127	135	141	165	158	148
September.....		134	149	147	167	158	154
October.....	110	139	150	150	160	158	154
November.....	105	138	148	147	163	154	152
December.....	102	138	140	146	163	155	150
Year.....		131	141	153	156	164	153

Source of data: Records in the office of the market administrator.

TABLE 43.—INDEX OF CHANGES IN FLUID MILK SALES IN LOUISVILLE RECORDS OF CONTINUOUS DEALERS CORRECTED FOR SEASONAL VARIATIONS

[1931-36=100]

Month	1931	1932	1933	1934	1935	1936	1937
January.....		102.3	97.7	99.0	98.1	100.6	97.9
February.....		105.1	94.3	99.5	100.3	100.4	95.2
March.....		105.7	93.7	100.3	98.4	102.8	102.0
April.....		107.0	92.7	101.4	97.0	103.6	104.8
May.....	103.0	103.8	93.9	102.7	97.4	103.2	104.5
June.....	106.5	99.8	95.4	102.3	97.2	105.6	105.0
July.....	108.4	103.7	92.4	98.1	98.8	107.7	106.7
August.....	102.3	100.2	93.2	99.5	101.4	105.7	104.6
September.....	99.3	100.9	95.6	99.8	98.3	104.3	105.4
October.....	97.8	99.0	98.1	98.6	101.4	102.1	103.9
November.....	98.0	98.6	96.9	99.6	102.1	103.1	104.6
December.....	95.9	98.3	96.4	98.2	101.3	104.5	105.2

Source of data: Records in the office of the market administrator.

TABLE 44.—RATIO OF THE RETAIL MILK PRICE LEVEL IN LOUISVILLE TO THE LEVEL OF FACTORY PAY ROLLS IN THE UNITED STATES

(1932-36=100)

Month	1931	1932	1933	1934	1935	1936	1937
January.....	95.5	108.8	128.7	112.1	102.8	90.8	83.9
February.....	82.7	101.5	129.0	99.9	79.5	90.7	81.4
March.....	73.7	104.8	132.1	83.4	87.6	86.0	77.0
April.....	75.0	112.6	139.7	90.0	98.1	84.2	71.6
May.....	83.8	118.6	127.4	90.0	95.3	82.4	69.8
June.....	88.1	127.9	115.7	92.8	99.1	84.4	70.4
July.....	92.6	131.6	112.9	95.7	100.4	90.3	72.0
August.....	101.5	135.7	106.0	96.9	94.0	83.4	71.1
September.....	105.6	127.9	101.0	103.7	90.7	83.2	77.8
October.....	105.3	122.7	101.3	98.4	87.4	87.6	77.8
November.....	115.1	127.9	108.3	103.1	88.2	85.9	87.1
December.....	116.0	131.2	110.4	104.1	86.0	81.9	69.3

Source of data: Index of retail milk price (1932-36=100) (see table 36) expressed as a percentage of the index of factory pay rolls (1932-36=100). Latter index from Bureau of Labor Statistics, U. S. Department of Labor.

TABLE 45.—PERCENTAGE OF SURPLUS OVER FLUID MILK AND CREAM SALES IN LOUISVILLE, KY., 1931-37, ADJUSTED FOR SEASONAL VARIATIONS¹

Month	Class III sales as a percentage of class I and class II sales in—						
	1931	1932	1933	1934	1935	1936	1937
January.....		61	56	44	35	33	60
February.....		56	59	33	36	35	55
March.....		60	56	20	41	25	46
April.....		47	57	38	47	30	50
May.....	40	68	52	37	42	36	49
June.....	41	62	47	38	50	32	51
July.....	48	54	53	42	60	32	56
August.....	51	51	51	39	41	40	42
September.....	54	43	45	37	53	51	38
October.....	56	60	51	30	29	63	30
November.....	58	63	45	27	23	50	36
December.....	61	56	54	30	28	47	40

¹ For all reporting dealers.

Source of data: Records of the association.

TABLE 46.—PERCENTAGE OF NORMAL RAINFALL IN LOUISVILLE, KY., 1931-37

Month	Actual rainfall as a percentage of normal in—						
	1931	1932	1933	1934	1935	1936	1937
January.....	24	164	116	25	84	40	479
February.....	81	80	85	12	38	59	47
March.....	65	89	130	82	166	68	17
April.....	99	87	150	37	77	106	106
May.....	52	17	161	87	232	29	108
June.....	82	73	18	112	120	9	108
July.....	47	100	108	57	114	46	25
August.....	85	153	64	144	108	65	125
September.....	128	108	108	110	63	125	29
October.....	89	115	66	20	74	122	169
November.....	94	53	26	32	62	114	46
December.....	107	141	99	83	58	74	96
Year.....	77	87	101	66	104	69	114

Source of data: U. S. Department of Agriculture, Weather Bureau, annual reports.

TABLE 47.—LEVEL OF THE AVERAGE PRICE FOR MILK RELATIVE TO PRICES FOR FEED, LOUISVILLE, KY., 1931-37

Month	Index of relative milk price (1931-37=100) ¹						
	1931	1932	1933	1934	1935	1936	1937
January.....		111	143	109	81	107	81
February.....		118	133	109	81	105	79
March.....		117	127	104	85	105	79
April.....		109	121	104	87	106	71
May.....	72	114	108	111	87	107	68
June.....	76	120	106	101	85	110	71
July.....	78	136	87	80	83	94	71
August.....	93	129	88	81	85	82	84
September.....	109	137	95	77	87	79	99
October.....	135	139	102	79	93	83	117
November.....	124	144	104	82	90	86	128
December.....	129	146	105	75	102	82	125

¹ Average price for grade B milk divided by the average feed price, thus measuring the changes in the purchasing power of milk in terms of feed. Milk price adjusted for seasonal variations.

The feed prices are composite and are composed of: 40 percent hay; 30 percent corn; 10 percent cottonseed meal; 10 percent gray shorts; 10 percent gluten feed.

Source of data: Tables 17 and 37.

TABLE 48.—LEVEL OF THE AVERAGE PRICE FOR MILK IN LOUISVILLE RELATIVE TO PRICES FOR OTHER FARM PRODUCTS, 1931-37

Month	Index of relative milk price (1931-37=100)						
	1931	1932	1933	1934	1935	1936	1937
January.....		110	114	120	92	84	73
February.....		121	115	122	88	81	72
March.....		123	114	124	89	85	73
April.....		115	116	127	89	88	70
May.....	89	121	113	130	88	88	67
June.....	94	128	118	133	85	92	67
July.....	93	132	108	121	80	97	62
August.....	101	129	107	115	77	99	64
September.....	105	135	109	105	72	96	63
October.....	110	133	108	112	80	94	73
November.....	102	128	104	115	81	93	72
December.....	104	128	111	115	92	91	73

Source of data: Average milk price divided by the index of other farm prices, thus measuring the changes in the purchasing power of milk in terms of other farm products. Milk price adjusted for seasonal variations.

TABLE 49.—SPREAD BETWEEN AVERAGE PRICE FOR MILK IN LOUISVILLE AND PRICE FOR MANUFACTURING MILK, 1931-37 ¹

Month	Spread in cents per 100 pounds						
	1931	1932	1933	1934	1935	1936	1937
January.....		45	63	101	69	59	90
February.....		62	73	81	37	44	91
March.....		61	78	74	57	58	90
April.....		49	74	79	45	55	88
May.....	72	60	60	78	74	76	79
June.....	71	66	65	76	69	78	67
July.....	58	84	42	55	61	54	46
August.....	68	74	73	59	73	66	69
September.....	66	83	77	67	66	79	84
October.....	43	74	71	64	74	83	74
November.....	49	73	71	69	56	86	67
December.....	55	58	79	71	53	93	51

¹ Both price levels adjusted for seasonal variations.

Source of data: Tables 17 and 33.

Appendix B

Statistical Notes

Correlation analyses were used to aid in the interpretation of the relationship between the volume of fluid milk sales and adjusted retail milk prices, and also to study the influence of several factors affecting the volume of surplus milk in the market. The results of these analyses are given briefly in the following notes.

1. *Monthly volume of fluid milk sales.*—Dependent variable: Fluid milk sales of Louisville dealers with continuous records, May 1931–December 1937 adjusted for seasonal variations, index numbers, 1932–36=100. (See table 45.) Independent variable: Retail milk prices in Louisville adjusted by the level of factory pay rolls, May 1931–December 1937, index numbers, 1932–36=100. (See table 46.) The coefficient of correlation between these two variables was +0.518. Assuming that these data meet the necessary requirements from the point of view of sampling method, the “reliability chart” prepared for this purpose, may be used to indicate the statistical significance of this measure of the correlation. With 2 constants in the regression equation and a total of 80 items, a coefficient of correlation of 0.285 would appear in only one case out of 100 by chance.¹¹ The correlation of 0.518 is well within the range of significance, therefore, from a statistical point of view.

From a more practical viewpoint, the coefficient of correlation squared is only 0.268, so that 0.732 is the coefficient of nondetermination, meaning that 73.2 percent of the total variations in fluid milk sales are unaccounted for by the straight line regression based on retail milk prices. Another somewhat similar analysis shows that the standard deviation of the original sales data (average of the squared deviations of the individual items from their mean) is but little higher than the standard deviation of the sales data estimated from the equation based on prices. In other words the standard error of estimate is only 14 percent less than the standard deviation of the original sales data.

2. *Monthly volume of surplus milk in the market.*—Dependent variable: Volume of surplus milk as a percentage of fluid milk and fluid cream sales, August 1931–December 1937. (See table 47.) Independent variables:

(a) Amount of rainfall in the area during the 3-month period ending with the current month, expressed as percentage of normal. (See table 48.)

¹¹ Davies, G. E. and Yoder, D. *Business Statistics*. 1937. p. 608.

(b) The pool price for market milk expressed in terms of the price level for feed in the area for the 3 previous months. (See table 49.)

(c) The pool price for market milk expressed in terms of the price level for other farm products in the area, average for the 3 previous months. (See table 50.)

(d) The spread between the pool price for market milk and the price level for manufacturing milk in the area, average for the 3 previous months. (See table 51.)

All of the variables were adjusted for seasonal variations where such variations were of any importance. The variables selected and the periods of lag used were determined by comparisons of graphic illustrations, and by logical reasoning. With rainfall, for example, the effect of a deficiency one month might be almost offset by a heavy rainfall the preceding or following month. With reference to pool prices, the price for a given month is not known to producers until after the middle of the following month, and in addition there may need to be some lag between the producers' first knowledge of a change in price relationships and their ability or willingness to increase or decrease milk production. The lag and the combination of 3 months data for the independent variables seem justified for these reasons.

The coefficients of simple correlation were as follows:

Between the volume of surplus and variable *a*, plus 0.391.

Between the volume of surplus and variable *b*, plus 0.392.

Between the volume of surplus and variable *c*, plus 0.318.

Between the volume of surplus and variable *d*, minus 0.065.

With 2 constants and 77 items, the first three of these are significant on the basis of the reliability chart. The fourth is not significant from this statistical point of view.

The coefficient of multiple correlation between the monthly volume of surplus milk and the four independent variables was 0.56 which is relatively low although well within the range of statistical significance, assuming an adequate sample. This multiple correlation coefficient may be interpreted to mean that variations in these four factors, on a straight line regression basis, account for almost 32 percent of the monthly variations in the volume of surplus milk, leaving about 68 percent unaccounted for, or 0.68 as the coefficient of nondetermination.

3. *Quarterly volume of surplus milk in the market.*—Dependent variable: Volume of surplus milk as a percentage of fluid milk and fluid cream sales, July 1931–December 1937, for each calendar quarter.

Independent variables: 3-month averages for period ending with first month in the calendar quarter: (a) Amount of rainfall as a percentage of normal; (b) pool price for market milk expressed in terms of the price level for feed; (c) pool price for market milk expressed in

terms of the price level for other farm products; (*d*) spread between the pool price for market milk and the price level for manufacturing milk.

As with the monthly volumes of surplus, seasonal variations were eliminated before the monthly data were combined into 3-month averages. The lags used here were obviously somewhat different from those in the previous analysis, although none the less logical.

The coefficients of simple correlation were as follows:

Between the volume of surplus and variable *a* plus 0.378.

Between the volume of surplus and variable *b*, plus 0.422.

Between the volume of surplus and variable *c*, plus 0.368.

Between the volume of surplus and variable *d*, plus 0.455.

All of these except the first are higher than in the previous analysis, but because of the small number of items, 26 in this case, none of these is highly significant statistically, based on the reliability chart. A coefficient of about 0.39 could be expected here in about 5 cases out of 100 due to chance.

The multiple correlation coefficient here, however, was highly significant, assuming satisfactory sampling, from a statistical point of view. It was found to be 0.764, or somewhat higher than in the previous analysis. This means that approximately 58 percent of the variations in the quarterly volume of surplus can be accounted for by the straight-line regression based on these four factors.

From the standpoint of logic there are reasons for believing that these four factors might account for more of the variations in the volume of surplus than these mathematical relationships suggest. In this connection it should be emphasized that there are several rather rigid limitations in the use of such statistical analyses. For example, adjustments for seasonal variations are made on a uniform basis throughout, whereas the variations due to seasonal factors are not the same in successive years. Also the period of lag was uniform throughout, whereas on a practical basis producers are probably much more sensitive to price changes at one time than at another. The relationship between the various factors may well have been curvilinear instead of in the form of a straight-line regression during particular periods.

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Bulletin No. 2, *Otis T. Weaver*

Cooperative Marketing of Agricultural Products

Bulletin No. 3, *Ward W. Farrow*

Cooperation in Agriculture, a Selected and Annotated Bibliography, Bulletin No. 4, *Chastina Gardner*

Organization and Operation of the Illinois Livestock Marketing Association, Bulletin No. 5, *H. H. Hulbert*

Statistics of Farmers' Cooperative Business Organizations, 1928-1935, Bulletin No. 6, *R. H. Elsworth*

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Bulletin No. 9, *J. W. Jones*

***Marketing Policies of the California Walnut Growers Association**

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Organization and Operating Problems of Nebraska Cooperative Creameries, Bulletin No. 11, *T. G. Stitts and Gordon C. Laughlin*

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