Bulletin 331 July 1936

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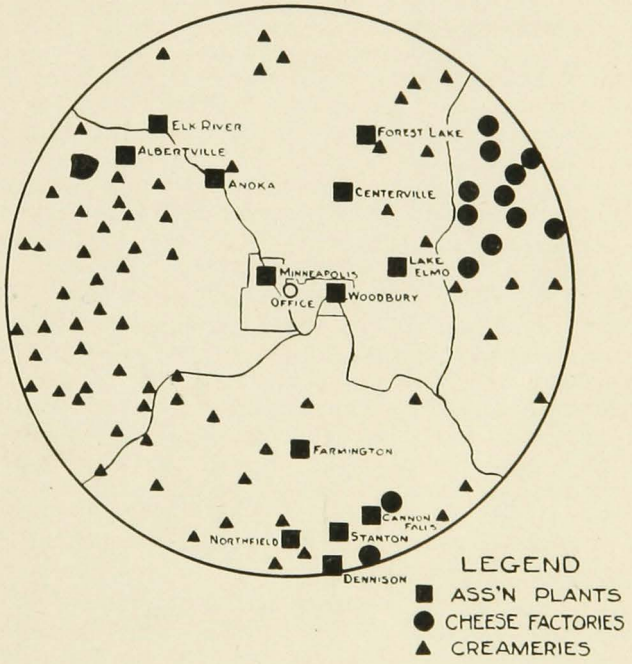
O. B. Jesness, Warren C. Waite, and Paul E. Quintus

Milk Plants in Twin Cities Area of a 40-Mile Radius



UNIVERSITY OF MINNESOTA
AGRICULTURAL EXPERIMENT STATION

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Fluid milk marketing presents some problems decidedly different from those of other farm products. These are largely the result of the characteristics of this commodity. Milk is perishable and bulky, consequently is not adapted to storage or to long-distance transportation. Altho there are seasonal variations in production, supply is continuous rather than the result of an annual harvest as is the case with crops. However, in order that there may be a sufficient supply to meet requirements during the season of low production, there is a surplus above those requirements during the period of flush production. Provision, therefore, must be made for marketing such surplus as well as the supply needed to satisfy the demand for fluid milk. Milk is a staple food and a fresh supply must be available daily. Sanitary requirements and regulations governing the production and handling of milk are essential because it is a medium favorable for the growth and spread of bacteria.

These characteristics of milk play an important part in the organization of the milk market. One result is that the supply comes from the immediate locality. The fluid milk supply of the Twin Cities, for example, comes from farms within a 40-mile radius of these cities. In the case of many farm products, the regions of production are determined largely by conditions governing production, so that the areas that lead in the production of a given commodity are those which possess advantages for its production. Thus, Minnesota leads in butter production because of its natural advantages for dairying. Market milk production, on the other hand, is determined mainly by the location of consuming centers. Butter and other manufactured dairy products find outlets in a variety of markets; the market milk producer depends upon a given market to provide his outlet.

In fluid milk areas not possessing natural advantages for dairying, or possessing greater advantages for the production of other commodities, dairy production will be primarily for supplying the local milk requirements. The Twin Cities, however, are located in a leading dairy region and as a consequence the fluid milk market is a minor rather than a major outlet. So much milk is produced in the area within 40 miles of the Twin Cities that only about 20 per cent of the supply is needed to satisfy the demand for fluid milk. This results in a close relationship between the outlets for fluid milk and manufactured dairy products in this area. Many dairymen in the area are producing entirely for sale to manufacturing plants. In addition, a large part of the milk from farms producing for the fluid milk market is surplus milk which must find its outlets in manufactured products.

For many farm products there are large market centers where buyers and sellers come together to make bids and offers which result in sales and establish market prices. The distribution of fluid milk lends itself well to large-scale methods, consequently a few large distributors commonly handle the major part of the supply in larger markets. There is

no common meeting place for arriving at day-to-day prices. In the absence of a producers' association, arrangements usually are made between buyers and sellers individually for prices for considerable periods of time.

Cooperative milk marketing associations occupy an important place in the marketing of milk as representatives of producers in their dealings with distributors. Some associations engage merely in collective bargaining with distributors for the purpose of arriving at a basis of payment for the milk produced by their members. Others, in addition to negotiating prices for milk sold to distributors, are equipped to dispose of surplus milk by manufacture. Producers in the Twin City area organized the Twin City Milk Producers' Association in 1916. This organization, which now has over 8,000 members, handles most of the milk supply of the Twin Cities, selling distributors their requirements of fluid milk and disposing of the balance in manufactured form.

Description of the Market

Up to about 40 years ago, the milk supply of the Twin Cities was largely delivered to consumers by the producers themselves. The growth of population and the development of pasteurization led to the establishment of plants for handling the milk and distributing it to consumers. The population of Minneapolis in 1930, according to the federal census, was 464,356 and that of St. Paul, 271,606, or a total for the two cities approximating three-fourths of a million. These two cities constitute one of the larger population centers of the country and hence one of the more important milk markets.

The handling and distribution of the 70,000 gallons of milk and 7,000 gallons of cream required daily by this market involves an investment in plant and facilities of about $9,000,000.[1] While there are a number of milk distributors serving this market, a large share of the business is concentrated in a few of the larger ones, three plants in each city accounting for about 70 per cent of the total. This is the customary situation in larger milk markets because of the extent to which fluid milk distribution is adapted to large-scale operations.

Milk comes from the farms to the pasteurization plants in 5- and 10-gallon cans. Receipts arriving at the plants during the day include milk from that morning and the night before. This milk is pasteurized, bottled, and placed in cold storage for delivery the following morning. Probably about 900 delivery vehicles are employed for milk delivery in the Twin Cities, or approximately one vehicle for every 820 persons.

One of the important characteristics of the Twin Cities milk market which needs to be kept in mind in connection with a consideration of marketing problems is its location in an important dairy region. Fluid milk constitutes a minor rather than the major outlet for the milk producers of the area. Under these conditions, there is a closer relationship between the prices of fluid milk and manufactured dairy products than is true for many other large markets. The retail price of milk and cream tends to be low compared with that of most large cities.

[1] See Monthly Bulletin of the Twin City Milk Producers' Association, July, 1932.

Consumption of milk and cream.—Distributors in Minneapolis are required to make reports to the Health Department and these supply data on milk and cream consumption in that city. Table 1 shows the annual sales of milk in Minneapolis from 1921 through 1935, for the different classes—pasteurized, raw, and certified. It will be noted that nearly all of the supply is made up of pasteurized milk and that the proportion of pasteurized milk showed an increasing trend for the period, being about 92 per cent of the total in 1921 and nearly 98 per cent in 1935.

Table 1. Milk: Fluid Sales in Minneapolis, 1921-1935

Year	Pasteurized		Raw		Certified		Total	
	Gallons	Per cent	Gallons	Per cent	Gallons	Per cent	Gallons	Per cent
1921	11,165,199	92.3	834,165	6.9	96,687	0.8	12,096,051	100.0
1922	12,487,192	93.0	843,892	6.3	100,517	0.7	13,431,601	100.0
1923	12,997,840	94.4	699,803	5.1	69,246	0.5	13,766,889	100.0
1924	13,789,984	95.8	532,343	3.7	76,013	0.5	14,398,340	100.0
1925	14,712,783	96.1	517,545	3.4	78,339	0.5	15,308,667	100.0
1926	14,746,014	96.4	495,519	3.2	60,654	0.4	15,302,187	100.0
1927	14,299,771	95.6	604,321	4.0	53,566	0.3	14,957,658	100.0
1928	14,860,073	96.2	541,366	3.5	50,395	0.2	15,451,834	100.0
1929	14,933,594	96.4	521,947	3.4	43,354	0.2	15,498,895	100.0
1930	15,469,026	96.7	490,352	3.1	34,193	0.1	15,993,571	100.0
1931	15,455,731	96.9	475,821	3.0	23,281	0.1	15,954,833	100.0
1932	15,440,626	97.2	421,834	2.7	16,243	0.1	15,878,703	100.0
1933	15,520,260	97.7	352,413	2.2	12,175	0.1	15,884,848	100.0
1934	14,957,735	97.5	368,167	2.4	12,373	0.1	15,338,275	100.0
1935	15,222,251	97.5	372,191	2.4	11,236	0.1	15,605,678	100.0

Using the population figures of the 1930 census and adding an estimate of 15,000 to cover suburban consumers, the daily per capita consumption of fluid milk in Minneapolis in 1930 averaged 0.73 pint. Because population figures since 1930 necessarily are estimates, per capita consumption for later years can not be computed with exactness. Total milk consumption has not changed very much, indicating that the per capita consumption for the years since 1930 does not differ greatly from the above figure.

Sales of cream in Minneapolis for fluid use are shown for the years 1924-1935 in Table 2. A comparison with Table 1 shows that the volume of cream sales approximates one-tenth of the sales of milk. Per capita consumption of cream in 1930 was 0.063 pint daily.

Similar data on volume of sales in St. Paul are not available because corresponding reports are not required. However, estimates indicate a consumption of fluid milk close to 10,000,000 gallons in 1930, or slightly less than two-thirds of the volume in Minneapolis. This is in line with the difference in population, indicating approximately the same per capita consumption for the two cities. Assuming the per capita consumption of fluid cream in St. Paul to be the same as in Minneapolis, cream sales in St. Paul amount to 1,000,000 gallons yearly. In the aggregate the Twin Cities consume over 25,000,000 gallons of fluid milk and 2,500,000 gallons of fluid cream each year, or approximately 70,000 and 7,000 gallons, respectively, daily. Comparisons with per capita consumption

figures of other cities are difficult because available figures have not all been derived in the same way or with the same degree of accuracy, but the consumption of 0.73 pint daily appears to be somewhat higher than that generally found in most other large cities.

Table 2. Cream: Fluid Sales in Minneapolis, 1924-1935

Year	Pasteurized		Raw		Total	
	Gallons	Per cent	Gallons	Per cent	Gallons	Per cent
1924	1,126,921	96.9	36,234	3.1	1,163,155	100.0
1925	1,168,932	96.4	43,800	3.6	1,212,732	100.0
1926	1,204,073	96.3	46,355	3.7	1,250,428	100.0
1927	1,252,826	96.5	44,895	3.5	1,297,721	100.0
1928	1,266,854	97.3	35,526	2.7	1,302,380	100.0
1929	1,266,099	96.1	51,723	3.9	1,317,822	100.0
1930	1,334,564	97.3	36,411	2.7	1,370,975	100.0
1931	1,606,776	97.8	35,919	2.2	1,642,695	100.0
1932	1,499,436	98.2	27,179	1.8	1,526,615	100.0
1933	1,397,692	98.4	22,727	1.6	1,420,419	100.0
1934	1,227,242	98.2	22,782	1.8	1,250,024	100.0
1935	1,270,537	97.9	26,889	2.1	1,297,426	100.0

One significant difference in the milk supply of Minneapolis and St. Paul is the larger proportion of raw milk sold in St. Paul. In 1933, raw milk constituted about 17 per cent of total sales in St. Paul, compared with less than 3 per cent in Minneapolis. The trend has been towards pasteurization, however, as in 1925 raw milk constituted over

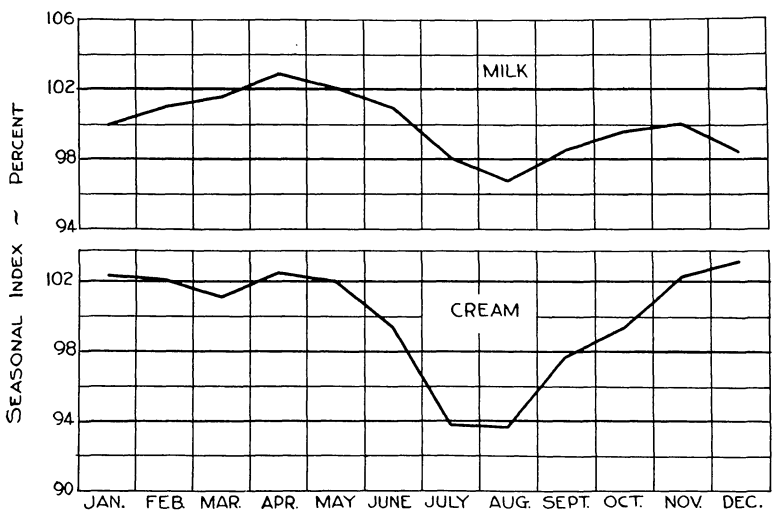

FIG. 1. SEASONAL INDEX OF MILK SALES AND CREAM SALES IN MINNEAPOLIS, 1923-1931

There is a greater variation in the index of cream sales than of milk sales. The low sales in August and July are caused principally by the absence of families from the city on vacations during that period. These variations are similar to those found in many other large cities.

30 per cent of the sales in St. Paul and in 1930, about 20 per cent. The difference between the two cities is accounted for largely by differences in municipal regulations.

The amount of milk and cream sold shows fairly regular seasonal variations (Fig. 1). The movement is definitely upward from December to April and downward from April to August. Increased sales following August reach a minor peak in November. Cream sales show a similar but greater variation, being highest in the winter and spring and by far the lowest in July and August. Per capita consumption of milk might be expected to be higher during the hot weather of summer. Total consumption during this period, however, is affected by the closing of schools and the absence of many people on vacation or at summer homes. December shows an increase in total consumption of cream compared with November, while in the case of milk it is lower. The holiday season and competition between milk and cream probably account for this difference.

Unit sales.—Complete data are not available regarding the proportions of milk and cream sales in various units. Records obtained from one of the large distributors in Minneapolis covering the five years, July 1, 1928, to June 30, 1933, are indicative of this distribution (Table 3). The percentages shown refer to the proportion of all milk sold. Thus, the company during this period sold about 7 per cent of its milk in gallon units, all of this being sold at wholesale. Sales of quarts represented 80 per cent of the total, about 33 being wholesale and 47 retail. Pints accounted for about 6 per cent and half-pints about 7 per cent. The sales of this company were almost equally divided between wholesale and retail. The proportion sold in quarts tended to increase during this period. Prices favored quart units over pints more during the latter part of the period than earlier, and this difference probably accounts for part of the trend. Reduced employment may have caused some reduction in sales of pints for workmen's lunches during the latter part of the period.

Table 3 also gives similar information for light and heavy cream sales of this company. As is to be expected, the larger proportion of the cream is sold in smaller units, half-pints accounting for 46 per cent of the total volume of both light and heavy cream, and pints accounting for 16 per cent of the light and 24 per cent of the heavy. There was a marked upward trend in the sale of pints, particularly at retail during this period. The trend towards pints probably resulted in part, at least, from efforts to encourage the use of larger units by price differentials and butterfat content favoring the pint unit.

Public regulation.—Because of the importance of milk as a food, especially for children, and because of dangers of spreading disease from a contaminated milk supply, cities generally have ordinances relating to milk and its handling. The regulations, however, vary among different cities. Prior to May 1, 1933, the Minneapolis regulations limited inspection to (1) dairies supplying raw milk, (2) pasteurizing plants, and (3) bottled milk and cream. Thus, farms supplying milk to pasteurizing plants were not subject to municipal inspection. The drop in butterfat prices in the early thirties brought an influx of milk from pro-

ducers who formerly had sold to manufacturing plants. This led to the adoption of a new ordinance requiring (1) inspection of all farms supplying fluid milk for sale in the city, and (2) pasteurization of the milk within city limits.[2] The ordinance sets up specifications for certified milk, pasteurized milk and cream, and raw milk and cream. St. Paul has long maintained a rather close supervision over farms supplying milk to that city. Dairies and dealers are required to have permits, but are not licensed. Inspections are made of dairies and plants.

Table 3. Proportion of Sales of Milk, Light Cream, and Heavy Cream in Various Units of One Distributor, 1928-1933

Unit	Milk	Light cream	Heavy cream
	per cent	per cent	per cent
Gallons, wholesale	6.8	11.0	1.9
Gallons, retail	0.0	0.0	0.0
Quarts, wholesale	33.4	27.1	27.8
Quarts, retail	46.6	0.4	0.5
Pints, wholesale	2.6	3.8	6.6
Pints, retail	3.2	11.9	17.0
Half-pints, wholesale	7.3	22.8	31.1
Half-pints, retail	0.1	23.0	15.1
Total	100.0	100.0	100.0
Unit			
Gallons	6.8	11.0	1.9
Quarts	80.0	27.5	28.3
Pints	5.9	15.7	23.6
Half-pints	7.3	45.8	46.2
Total	100.0	100.0	100.0
Method			
Wholesale	50.1	65.2	67.4
Retail	49.9	34.8	32.6
Total	100.0	100.0	100.0

Milk and Cream Prices

The retail prices per quart of milk for family trade in the Twin Cities for the years 1919 to 1935 are given in Table 4. It will be recalled that during 1919 and much of 1920, prices of most products were still on the levels of the World War period. Retail prices of milk during most months of these two years were 13 or 14 cents, or higher than they have been since that time. Prices for many farm products fell drastically during 1920 and 1921. Milk prices weakened so that much of the time during 1921 and 1922 they were 10 or 11 cents. Some improvement took place in 1923. In 1927 the price went to 12 cents and remained at that figure through 1929. Prices weakened somewhat during 1930 and 1931, because of the depression period and falling prices for manufactured dairy products, and showed a decided break in 1932 and 1933 when the fluid milk market became badly disorganized. It will be noted that previous to 1926 there was a definite tendency for the price to go up one cent a quart during the period of relatively light production in

[2] The enforcement of this part of the ordinance has been restricted by a court injunction.

the late summer and fall. In the years when the increased price remained in force through the following summer, there generally was an additional increase that fall.

Table 4. Retail Prices of Milk, Minneapolis and St. Paul, 1919-1935

Month	1919	1920	1921	1922	1923	1924	1925	1926	1927
				Cents per quart					
January	13-14*	13	13	10	11	12-11	11	12-11	10
February	14-13	13	12	10	11	11-12	11	11	11
March	13	13	11	10	11	11-12	11	11	11
April	13	13	11	10	11	10	11	11	11
May	12	13	11	10	11	10	11	11	11
June	12	13	10	10	11	10	11	11	11
July	12	13	10	10	11	10	11	11	11
August	13	14	11	10	12	11	11	11	11
September	13	14	11	11	12	11	12	11	12
October	13	14	11	11	12	11	12	11	12
November	13	14	11	11	12	11	12	11	12
December	13	14-13	11-10	11	12	11	12	11	12

Month	1928	1929	1930	1931	1932		1933		1934	1935
					St. P.	Mpls.	St. P.	Mpls.		
January	12	12	11	10	10	9	8	7	9	10
February	12	12	11	10	10	8	8	7-5	9	10
March	12	12	11	10	9	8	6	5	9	10
April	12	12	11	10	9	8	6	5	9	10
May	12	12	11	10	9	8	6	5	9	10
June	12	12	11	10	9	8	6-7	7-8	9	10
July	12	12	11	10	8	8	8	8	9	10
August	12	12	11	10	8	8	8	8	9	10
September	12	12	11	10	8	8	8	8	10	10
October	12	12	11	10	8	8	8	8	10	10
November	12	12	11-10	10	8	8	8	8	9	10
December	12	12	10	10-9	8	8	9	9	9	10

* Where two prices appear for a given month, it is because the price was changed during the month.

The extremely low retail price (five cents a quart) in Minneapolis early in 1933 resulted from a milk price "war" and generally unstable market conditions. During 1932 and 1933 the price in Minneapolis was lower than that in St. Paul. Due largely to differences between the milk ordinances of the two cities at that time, the pressure of outside milk made its influence felt more in Minneapolis than in St. Paul. The price in the latter city, however, was influenced somewhat by the demoralized situation in Minneapolis. These two cities are essentially one market and with the revision of the milk ordinance of Minneapolis and the development of the Agricultural Adjustment Administration's program for the market, the prices in the two cities came back into line.

Comparative prices.—The retail price of milk in the Twin Cities has ordinarily been lower than in other cities of comparable size, with the possible exception of Milwaukee. As pointed out earlier, the location of the Twin Cities in the heart of a leading dairy region producing milk mainly for manufacturing purposes results in a closer relationship between fluid milk prices in this market and those of manufactured pro-

ducts than in areas where production is mainly for sale as fluid milk. If prices of fluid milk get out of line with manufactured products, some of the supply ordinarily sold for manufacturing purposes will seek entry into the fluid milk market in order to obtain the better price.

Cream prices.—Retail prices of cream have fluctuated in about the same manner as those of milk except that cream prices were reduced somewhat more slowly during the early part of the depression. For the period 1925 to 1935, the range in retail prices of half-pints of light cream in Minneapolis was from a high of 16 cents in the summer and fall of 1925 to a low of 7 cents at times in 1933. The price was 15 cents most of the time during 1925 to 1930. In November 1930 it dropped to 13 cents; in April, 1931, to 11 cents; in July to 10-11 cents; in May 1932 to 9-10 cents, and in February 1933 to 7-9 cents. It went back to 9-10 cents in June 1933, to 11 cents in September, and 12 cents in December, where it remained until September 1934 when it rose to 13. It dropped back to 10 cents during November and December, and rose to 11 cents in January, 11-12 cents in February, 12 cents in March, and then dropped back to 11 cents in June. The prices for St. Paul were similar except for certain months in 1932 and 1933 when they were higher than those in Minneapolis.

Cream prices, like milk prices, tend to be lower in the Twin Cities than in other cities of comparable size. During the period of more stable prices when half-pints were retailing at 15 cents in the Twin Cities, other cities for which information is available had prices ranging from 17 to 30 cents. Cream prices are less standardized than milk prices, so there is a wide variation among markets in the relative price of butterfat in cream and in fluid milk. In markets where cream is relatively high in price compared with milk, the former apparently is looked upon as a luxury product which should bear a relatively larger proportion of the costs of distribution. Since the demand for cream is more elastic than for milk, the outlet for butterfat might be increased by lower cream prices in markets where cream is relatively high in price.

Dealers' Margins

Keen interest is manifested by both producers and consumers in the spread between the price received by the producer and that paid by the consumer. The former sees possibilities of greater return to him if the spread can be narrowed, and the consumer in turn thinks of possible savings to himself from this source.

The actual spread is not ascertained as readily and easily as many appear to think. A popular belief is that all one needs to do is to convert the price received by the farmers for their milk to a quart basis and then subtract this figure from the price paid by the consumer for a quart of milk delivered to his home. Unfortunately this simple method does not give the actual spread, and its use leads to erroneous conclussions. A major point overlooked by such a comparison is that not all of the milk delivered by the farmer is sold to consumers as fluid milk. Some of it is surplus milk that is sold in manufactured form, usually at lower prices. Less than half of the milk handled by the Twin City

Milk Producers' Association is sold to milk distributors. The rest is manufactured by the association and the products sold. The price paid by the association to its members is arrived at by averaging the returns for milk sold to distributors and that manufactured. Because the latter usually sells at a lower price, comparing prices to farmers for all of their milk with prices paid by consumers makes the spread appear larger than it actually is.

It is necessary, therefore, to use the price paid for milk intended for sale in fluid form and the price paid by consumers to determine the spread. Even this method fails to give the actual margin of the distributors, because the latter sell considerable quantities of milk at wholesale for which they receive lower prices than that charged the consumers.

The wide spread between prices paid by distributors and the consumers' price frequently leads to the assumption that the dealers' net profits per unit of product must be large.[3] Most of the difference is required to cover handling and distributing costs, so that the net profit per quart normally is small. The spread can be narrowed in the main only if the expenses of handling and distributing fluid milk can be reduced. These qualifications should be kept in mind in connection with the following discussion of margins.

Table 5. Prices Distributors Paid the Twin City Milk Producers' Association for 3.5 Per Cent Milk, 1919-1935

Year	High	Low	Average	Year	High	Low	Average
	Dollars per cwt.				Dollars per cwt.		
1919	$3.96	$3.08	$3.51	1928	$2.85	$2.80	$2.80
1920	3.80	2.80	3.36	1929	2.80	2.70	2.76
1921	3.41	2.05	2.45	1930	2.60	2.15	2.35
1922	3.10	2.10	2.51	1931	2.00	1.85	1.88
1923	3.00	2.58	2.82	1932 (Mpls.)	1.65	1.20	1.34
1924	2.80	2.10	2.51	1932 (St. P.)	1.85	1.20	1.47
1925	2.90	2.50	2.64	1933 (Mpls.)	1.70	.50	1.11
1926	2.80	2.40	2.55	1933 (St. P.)	1.70	.91	1.25
1927	2.80	2.60	2.69	1934	2.00	1.60	1.71
				1935	1.95	1.75	1.85

Table 5 shows the prices paid the Twin City Milk Producers' Association by distributors in dollars per hundred pounds of 3.5 per cent milk for the years 1919 to 1935. These prices do not represent the prices paid producers by the association. The latter are arrived at by averaging the prices received from distributors and the returns from the sale of milk in manufactured form and deducting expenses of operation, including a zone differential to cover costs of delivering milk to the Twin Cities.

[3] One of the large distributors in Minneapolis reports the following profit or loss per unit since 1929. (The term "unit" refers to a single package, i.e., quart, pint, or half-pint.)

Year	Cents	Year	Cents
1929	0.40 profit	1933	0.12 loss
1930	0.34 profit	1934	0.16 profit
1931	0.15 profit	1935	0.33 profit
1932	0.15 loss		

Table 6. Distributors' Spread in the Twin Cities on the Basis of 3.5 Per Cent Milk, Annual Averages 1919-1935

Year	Spread	Year	Spread	Year	Spread
	Cents per quart at retail				
1919	5.4	1926	5.5	1932 (Mpls.)	5.2
1920	6.1	1927	5.4	1932 (St. P.)	5.5
1921	5.3	1928	6.0	1933 (Mpls.)	4.6
1922	5.1	1929	6.1	1933 (St. P.)	4.9
1923	5.3	1930	5.8	1934	5.5
1924	5.5	1931	5.9	1935	6.0
1925	5.6				

Table 6 shows the spread between the prices paid by distributors converted to a quart basis and the retail prices for milk delivered to the consumer.[4] It will be noted that the spread computed in this manner ranged from 5.1 cents to 6.1 cents a quart between 1919 and 1932. The trend during the period was upward. The demoralized condition early in 1933 reduced the spread temporarily below 5 cents. The spread remained relatively high during 1931 and 1932, a period when prices to producers were relatively low. Evidently, producers bear the main burden of falling prices. Fluctuations are greatest in producers' prices during periods of price change. Distributors' margins tend to fluctuate relatively little. In a period of low prices, consequently, the spread represents a larger proportion of the retail price than when prices are high.

Milk producers who see their prices lowered in order to dispose of their product during a depression period naturally look with question upon the relatively fixed margins of milk distributors. They ask why the cut should not be shared all along the line rather than to be taken mainly out of the producers' price. Distributors may point out that their costs are relatively fixed and that margins can not be reduced unless equipment and supplies needed in milk distribution can be obtained at lower costs, wages be lowered, and interest and tax burdens reduced. Producers may answer that the prices of their requirements and their interest and tax burdens do not adjust themselves quickly to lower milk prices and that they have to absorb the cut in form of lessened return on their labor and capital.

It should be appreciated that this is not a condition peculiar to the fluid milk business. Farming is carried on by large numbers of relatively small producing units. The output of any single farm is an insignificant part of the total supply, so an individual producer lacks inducement to curtail his own output for the purpose of maintaining prices for the supply in general. Lacking better outlets for the use of his labor, farm and capital, the best thing for him to do as an individual is to continue production and dispose of his products at whatever prices they will bring in the market. The result is that agricultural production is maintained during depression periods and decidedly lower prices have to be accepted in order to dispose of the supply. In many other lines of production, the units are large. They have greater incentive to adjust production in order to maintain prices. Furthermore, industrial

[4] As explained above, the spreads shown here do not represent the actual margins of distributors on all of their milk because all of their receipts are not sold as fluid milk nor at retail.

production often lends itself to control better than does agricultural production. The result is that in many industries, prices are maintained and production is adjusted.[5] Industrial producers often arrive at their prices and produce only the amounts that can be moved at those prices. Reference is made to this situation here as a reminder of the differences between agriculture and industry. The position of milk distributors is somewhat similar to that of large industrial producers.

Wages constitute an important part of the expenses of distributing milk.[6] The workers are organized and their organizations are influential in determining and maintaining wage scales. Farmers may express the opinion that workers in the milk industry should share in lower milk prices by accepting lower wages. Workers, on the other hand, are likely to hold the view that the problem of the farmer is one to be solved by restoring prices paid them for milk rather than by reducing the returns to labor. They point out the importance to farmers of restoring and maintaining consumer purchasing power. Over a period of time, the situation will adjust itself in one or both of two ways. If the general price level is lowered, costs including wages will tend to be lowered. As conditions improve, it may be expected that there will be some improvement in prices to farmers. However, these adjustments tend to come slowly and meanwhile the producers feel that they are at a disadvantage.

Information available for one of the large distributors regarding its distribution costs is shown in Table 7. These costs apply to the business as a whole, and the unit employed is a separate package. For that reason the figures are not directly comparable with the dealers' spread in Table 6 which is in terms of quarts of milk. Delivery costs account for about 65 per cent of the total. Data on the delivery costs for another large distributor gave a similar percentage for delivery.

The wide spreads in milk distribution are not peculiar to the Twin Cities as the margins in the Twin Cities are not out of line with those in other large cities. In fact, they tend to be somewhat smaller than in most other cities of comparable size. The Agricultural Adjustment Administration in an investigation in 50 cities in September, 1934, found an average spread of 6.11 cents. The Twin City spread at that time was 5.63 cents. The range was from 4.41 cents to 8.34 cents. Thirty of the 50 cities had wider spreads than the Twin Cities.

[5] An illustration of this may be found by comparing farm products and agricultural implements. The production of farm products between 1929 and 1933 dropped only 6 per cent, while prices of farm products dropped 63 per cent. The price of agricultural implements dropped only 6 per cent, but production fell 80 per cent. (Senate Document No. 13, 74th Congress, 1st Session. "Industrial Prices and Their Relative Inflexibility.")

[6] The drivers' minimum wage scales since 1923 have been as follows:

$35.00 per week from January 1, 1923 to May 1, 1929.
$37.00 per week from May 1, 1929 to January 2, 1932.
$35.00 per week from January 2, 1932 to November 3, 1932.
$31.50 per week from November 3, 1932 to March 16, 1933.
$26.50 per week from March 16, 1933 to May 15, 1933.
$31.50 per week from May 15, 1933 to November 29, 1933.
$33.00 per week from November 29, 1933 to June 5, 1935.
$34.00 per week from June 5, 1935 to date.

In addition, drivers may receive a bonus based upon the number of points or units sold per month on their route. A change of $10 a month in the wage scale is roughly equivalent to a change of one cent a quart in the delivery cost of milk.

Table 7. Distribution Costs Per Unit of Product, 1929-1933*

Cost classification	1929	1930	1931	1932	1933
			Cents per unit		
Administrative	1	0.9	0.8	0.8	0.7
Delivery	2.9	3.0	3.0	3.0	2.7
Plant	1	1.0	1.0	0.9	0.9
Total	4.9	4.9	4.8	4.7	4.3

* Every separate package is considered a unit, regardless of value. For example, one quart of milk and one pound of butter are each one unit.

The fact that the spread remained relatively high during the early thirties encouraged the growth of small distributors who by going outside the usual sources of supply and employing labor at less than union rates could undersell the established distributors who had higher costs of raw milk and operation. This was particularly the case in Minneapolis because its ordinance at the time did not require farms supplying dealers to have permits in order to sell their milk in Minneapolis. As a result, the market was demoralized for several months during 1932 and 1933. A price war led to the sale of considerable milk at very low retail prices. The association for a time reduced prices charged dealers drastically in order to hold its market. Stability was restored, the adoption of a marketing agreement and licenses under authority of the Agricultural Adjustment Administration being an aid to this end.

Milk plant and distributing facilities probably are in excess of requirements. An extensive engineering and accounting appraisal would be necessary to determine the extent to which this may be the case and to arrive at estimates of savings which might be possible from a closer adjustment to needs.

The consumer's attention frequently is attracted to the duplication in milk routes. As many as 10 different distributors may make deliveries in a single block. While such duplication adds to distribution costs and hence to the margin required, savings possible from the elimination of such duplication may easily be overestimated. The duplication situation is the result of competition and while various ways have been suggested for remedying it, acceptable programs are yet to be developed.

Producer-Distributors

Producers who produce and bottle raw milk and deliver it to city consumers are not an important factor in the Twin City market. This is especially true of Minneapolis, where 98 per cent of the milk is pasteurized. The amount of raw milk sold by producer-distributors in St. Paul is larger, but the trend in this market has been toward pasteurization.

Marketing Agreements and Licenses

The Twin City market was one of the first milk markets in the country to operate with a marketing agreement and licenses under authority of the Agricultural Adjustment Administration, these going into effect September 2, 1933. The agreement was signed by the Twin City Milk

Producers' Association as the principal representative of the producers and the leading milk distributors of the market, and approved by the Secretary of Agriculture. It specified a minimum price to be paid producers for milk by the distributors ($1.42 per hundredweight) and fixed retail and wholesale selling prices for the various products sold by the distributors. (For example, prices of milk were set at 8 cents per quart retail and 11 cents for a half-pint of light cream.) Each distributor was granted a license to operate in the market as long as he complied with the provisions of the license, these being identical with those of the agreement.

The agreement was cancelled by the Secretary of Agriculture on February 1, 1934, but the market still operates (August, 1936) under amended Federal licenses. The present license provides for a minimum price to the producers of $1.75 per hundredweight for milk purchased by distributors. Prices may exceed this minimum as in fact they did during most of the months of 1935. A considerable proportion of the producers and distributors appear to believe that continued operation under the federal license is desirable and aids in stabilizing the market.

The Twin City Milk Producers' Association

The largest share of the milk supply of this market reaches the distributors through the Twin City Milk Producers' Association. A description of many phases and activities of this organization therefore is necessary to get an accurate picture of the market.

This association was formed in 1916 because producers were dissatisfied with conditions in milk marketing. It was about this time that milk producers in many metropolitan milk sheds were organizing in order to protect their interests. Conditions growing out of the World War were resulting in higher production costs, particularly for feed and labor. Producers found difficulty in getting their selling prices advanced to cover such increases because dealers were reluctant to raise prices to consumers, being aware of the resistance which such a move would encounter. Consumers were accustomed to stable retail prices for milk and under such circumstances object more strenuously to a rise in prices than if they are accustomed to fluctuations.

Local associations had been established previously in the Twin City area, but these lacked the bargaining power necessary for success. The demands of any given local association for higher prices could be ignored by dealers because if the producers represented by it did not want to sell, their milk could be replaced by supplies from other areas. A dealer naturally would be unwilling to yield to the demands of a local association where the result would be to increase the cost of his supply and not that of his competitors. Realization of the necessity of handling the milk marketing problem of the area as a unit brought about the establishment of the Twin City Milk Producers' Association. Tho organized in 1916, some months were required for perfecting the plans so actual business operation began in 1917. At first, the association encountered considerable opposition, including indictment of its officers on the grounds that the organization was in restraint of trade. The case finally

was dropped, and as the organization progressed much of the early opposition was overcome.

Membership and organization.—The association includes approximately 8,000 producers in its membership. During earlier years the association experienced a steady growth in membership, but in recent years the number has not varied greatly. The membership could be enlarged considerably were the association to extend its territory, but as long as the milk production of the farms now represented in the membership is far in excess of the supply required for fluid milk purposes this is not likely. Some criticize the association because it includes so many producers that there is a large volume of surplus milk and this weakens its bargaining position. However, the difficulties that would result from an attempt to exclude part of the fluid milk producers of the area are overlooked in such criticisms.

Members are under contract to sell through their organization. Withdrawal is permitted during a 30-day period each year, but the number of withdrawals normally is very small. New members must agree (1) to have their farms inspected, (2) to buy stock, and (3) to have reasonable facilities for the handling of milk, before their contracts are accepted.

The membership is grouped into 51 local units varying from 30 to 350 producers. These units serve as convenient groups for the meeting of members to consider problems of the organization and to keep in contact with its operations. Each unit nominates one of its members for election to the board of directors at the annual meeting.

The board of directors, consisting of 51 members, select from their own number an executive committee of five. This committee is in general charge of the business of the organization and supervises the activities of the general manager who carries out the policies of the board of directors and executive committee.

Finances.—The association started with an authorized capital of $50,000 divided into shares of $1 par value. Each member was allocated one share for every four cows in his herd. At the outset, the organization leased plants and consequently did not require a large capitalization. Because this arrangement did not provide the desired flexibility in adjusting plants and equipment to meet its needs, plants were acquired by the association in 1919 and the par value of the stock was raised to $50 a share and the capitalization to $500,000. In 1922, the capitalization was increased to $1,000,000 and in 1926 to $3,000,000 to provide for increases in plants and facilities.

Production.—Unlike many metropolitan milk sheds, the fluid milk market is not the most important outlet in the area supplying milk to the Twin Cities. Not only is a considerable share of the milk produced by association members used for manufactured products, but there are also a number of dairy manufacturing plants in the area in addition to those operated by the association. (See the figure on the cover of the bulletin). The organization handles over 80 per cent of the milk supplied to the Twin Cities, most of this being delivered directly to the plants of the distributors. The proportion of the total dairy production of the area which it handles, however, is very much smaller. Were the radius of the milk shed extended to 80 miles—an area considerably less

than that included in the milk shed of many metropolitan markets—it is estimated that the production included would total twenty times the fluid milk required by the Twin Cities. The location of this market in such an important dairy region has a very direct effect on marketing problems. It increases the amount and importance of so-called "surplus" milk for which the association must find outlets other than by sale for consumption as fluid milk. It also establishes a close relationship between fluid milk prices and those of manufactured dairy products. If prices for milk or cream sold for manufacture fall too far below the price paid for fluid milk, there is pressure to divert milk from the outlets for manufacture to the fluid market.

In addition to fluid milk and cream, the association manufactures and sells a variety of products including butter, cheese, casein, ice cream, cottage cheese, and different kinds of condensed milk and milk powder. The diversion of milk into these various products depends upon the supply of milk available and the market conditions. The object is to use the milk not needed for fluid purposes in those outlets which will provide the best return.

Returns for milk sold to distributors and that sold in the form of manufactured products are pooled in arriving at the price paid producers. The price received by members consequently is dependent not only upon the price of fluid milk but also upon the prices of manufactured products. When the latter are low in price relative to fluid milk and the amount of surplus is large, the price received by producers may be materially below that paid by distributors for their supplies. Many apparently fall into the error of attempting to compare these prices directly, failing to appreciate that they relate to different commodities and volumes. The price to producers is established on the basis of delivery to the Twin Cities, deductions in arriving at his net returns being made in accordance with the zone in which the producer is located. These zone adjustments recognize the location advantages of nearby producers. Some members deliver cream instead of milk. This is handled in a separate pool, the cream being churned into butter and the price being determined upon the basis of the price received less expenses.

Some questions arise over the deduction of the zone differential for milk delivered to outlying plants and manufactured there. Such questions frequently result from a failure to consider the interrelationships in the area. Were the producers delivering to the outside plants willing to accept a price based solely on manufactured products, there would be no occasion for deducting a zone differential. But under existing circumstances their production is a part of the milk supply and they share in its price. Were all of the supply to enter the Twin Cities, all of the plant facilities would be located here and transportation costs would have to be paid on all of the fluid milk. The manufactured products are less bulky, and less expense is involved in moving them to market. Were settlement made on the same basis to all producers regardless of location, the ones near the market would be penalized. Local prices for farm products tend to be lower as distance from market and hence transportation costs increase. The zone differentials are a recognition of this.

Fluid milk differs from most farm products in that its sale is not accomplished through the meeting of numbers of buyers and sellers or their representatives in market places. The prices paid to the Twin City Milk Producers' Association by the distributors are arrived at through negotiations between the two parties. At one time a formula having butter and cheese prices as its base was used in arriving at a price, but this failed to give adequate consideration to other factors and consequently its formal use was discontinued. Prices of manufactured products, however, are given careful consideration in arriving at the price to be paid by dealers.

The quantity of milk available including the possibilities of new sources of supply, the price of manufactured products, and the condition of the retail market, have to be considered in negotiating price. The association appears to have maintained a reasonable price policy, and this has been one of the basic features of its success.

Volume of business.—The association handled about 70 million pounds of fluid milk in 1918. By 1933, this had increased to about 380 million pounds. Largely because of drouth conditions, the total in 1935 dropped to 349 million pounds. The gradual increase in volume during most of this period is accounted for by an increase in membership and in the amount of milk per member. During the earlier years members supplied an average of about 130 pounds daily. In recent years the average has been around 170 pounds. A rough estimate indicates that about 100 million pounds of the increase in volume during the period came from increased output per member. While exact data are not available relative to the number of cows kept by members, increase in cow numbers is the principal explanation for the increase in volume per member.

The fact that production has increased more rapidly than the consumption of fluid milk, with consequent increase in the proportion manufactured, might be interpreted as indicating that prices for fluid milk have been so liberal that production was stimulated. It is well to note in this connection that production of butterfat in the state was increasing during this period. Thus, the output of creamery butter in Minnesota in 1918 was about 133 million pounds, while in 1933 it was 299 million pounds. Part of this increase was the result of a shift from farm to creamery butter, but much of it represented an increase in production of milk. In other words, the increased milk production in the Twin City area was not out of line with the increase in the rest of the state.

Table 8 shows the volume of milk handled by the association, its sales to distributors, and the amounts and proportions manufactured. These figures show that production by the members has increased more than have the outlets for fluid milk, resulting not only in a larger total manufactured but also in a larger proportion of the milk disposed of through manufactured products. The last several years more of the milk has been manufactured than has been sold to distributors. This emphasizes the interest which the producers have in prices for manufactured dairy products. During periods when prices for butterfat are unusually low, the difference between the price paid by consumers for milk and that received by the producers for their total supply is widened.

The distribution among various uses of fluid milk handled by the association is shown in Table 9. It will be noted that for several years prior to 1935 more milk was separated than was sold for fluid purposes. The separation of such a large amount of milk has resulted in a large volume of skimmilk. The principal outlets for this product are (1) condensed skimmilk, (2) powdered skimmilk, (3) casein, (4) sale to

Table 8. Disposition of Milk Handled by Twin City Milk Producers' Association, 1920-1935

Year	(1) Pounds of milk handled	(2) Pounds of milk sold to distributors	(3) Pounds of surplus milk manufactured	(4) Per cent manufactured
1920	97,303,379	78,218,850	19,084,529	19.6
1921	147,031,303	98,242,331	48,788,972	33.2
1922	161,502,871	116,751,838	44,751,033	27.7
1923	215,035,772	140,010,056	75,025,716	34.9
1924	252,053,926	143,521,773	108,532,153	43.1
1925	279,521,109	150,435,501	129,085,608	46.2
1926	297,226,178	148,203,976	149,022,202	50.1
1927	296,416,296	150,711,362	145,704,934	49.2
1928	315,264,795	155,137,504	160,127,291	50.8
1929	347,880,437	155,261,703	192,618,704	55.1
1930	370,826,637	161,907,661	208,918,976	56.3
1931	363,487,501	155,796,287	207,796,214	57.2
1932	363,846,371	151,755,717	212,090,654	58.0
1933	379,522,688	175,303,357	204,219,331	53.8
1934	384,364,231	169,971,672	214,392,559	55.8
1935	348,952,264	172,871,117	176,081,147	50.5

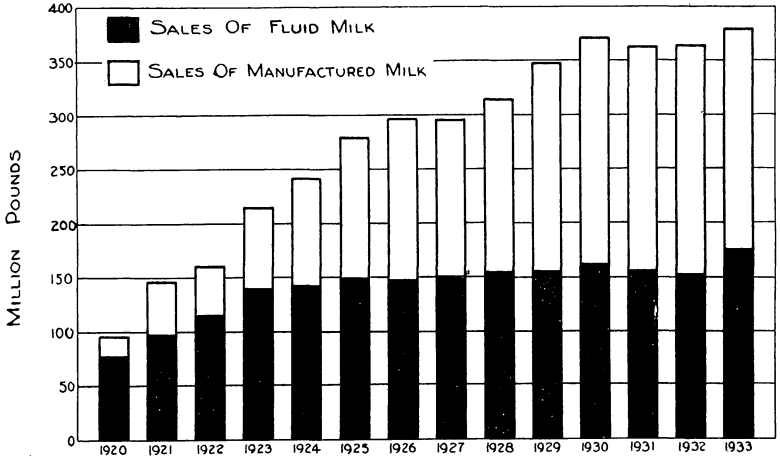

FIG. 2. ALL MILK HANDLED AND THE SALES OF FLUID MILK TO DISTRIBUTORS BY THE TWIN CITY MILK PRODUCERS' ASSOCIATION, 1920-1933

The amount of milk handled by the Twin City Milk Producers' Association increased rapidly until 1930 but has not changed greatly since. It has been necessary to manufacture increasing quantities of this milk since fluid milk sales to distributors have not increased greatly since 1925.

distributors, (5) sale to producers, and (6) sale to special users. The relative importance of the various uses to which skimmilk is put naturally varies considerably from time to time in accordance with changes in the markets.

Table 9. Percentage Use of Whole Milk, Twin City Milk Producers' Association, 1926-1935

(Twelve Months Ending September 30)

Year	Sold as fluid milk	Separated	Used in cheese	Condensed	Used in ice cream	Total
	per cent	per cent	per cent	per cent	per cent	per cent
1926	49.70	42.00	6.20	2.10	.....	100.0
1927	51.42	42.87	3.08	2.60	0.03	100.0
1928	49.36	42.91	5.38	2.33	0.02	100.0
1929	46.69	42.81	4.48	6.01	0.01	100.0
1930	44.04	44.04	3.68	8.22	0.02	100.0
1931	43.88	46.96	3.71	5.43	0.02	100.0
1932	42.52	53.42	1.89	2.15	0.02	100.0
1933	45.76	52.52	1.21	0.49	0.02	100.0
1934	44.22	53.64	1.31	0.81	0.02	100.0
1935	49.55	45.21	0.84	2.67	0.02	100.0*

* Includes 1.71 per cent sold to condenseries.

Expenses of operation.—For the year ending September 30, 1935, the expenses of operating the association totaled 18.20 cents per hundred pounds of milk.[7] Of this, general expenses were 2.99 cents, station expenses were 11.02 cents, and supplies 4.19 cents. Of course, all of this can not be regarded as additional expense which the farmers would save were there no association. Plants would have to be operated and supplies involved in manufacturing would need to be purchased. This leaves only the item of general expense (amounting to 2.99 cents a hundred in 1935) to represent the additional cost to the producer. At least part of this may also be charged off on the grounds that were the business handled by distributors or other agencies there would be some additional overhead expense. Moreover, while difficult to prove statistically, it appears reasonable to conclude that there are economies in having one large organization handling the surplus rather than to have this milk handled by the various distributors as sidelines to their main activity of distributing fluid milk. The larger organization has greater advantages in shifting from one product to another as market changes may justify. The individual plant would have less flexibility in this regard. In addition, the larger volume undoubtedly is an aid in selling products and buying supplies advantageously. Some market areas find a simple bargaining association, which merely represents the producers in their dealings with distributors and does not actually handle any milk, sufficient. For an area such as the Twin City territory, an operating association that takes care of surplus milk itself probably is the most satisfactory in the light of the advantages mentioned above.

Seasonal Variations in Milk Production

Seasonal variations in the supply of milk create an outstanding problem in marketing. Sales of fluid milk and cream, altho influenced by

[7] Twin City Milk Producers' Bulletin, December, 1935.

many factors such as the day of the week, holidays, vacations, conventions and temperature, are relatively stable from month to month. In Minneapolis, for example, milk consumption varies about 6 per cent and fluid cream consumption not over 10 per cent from the peak month to the low month. As is shown in Figure 3, milk production varies much more. Production is distinctly higher from October to June, with a slight decline in April. Production begins to fall off sharply in June and continues to decline until the low point is reached in September or October. The June volume averages about 50 per cent greater than that during the early fall. More than 55 per cent of the milk is produced during the first six months of the year and less than 45 per cent during the last half.

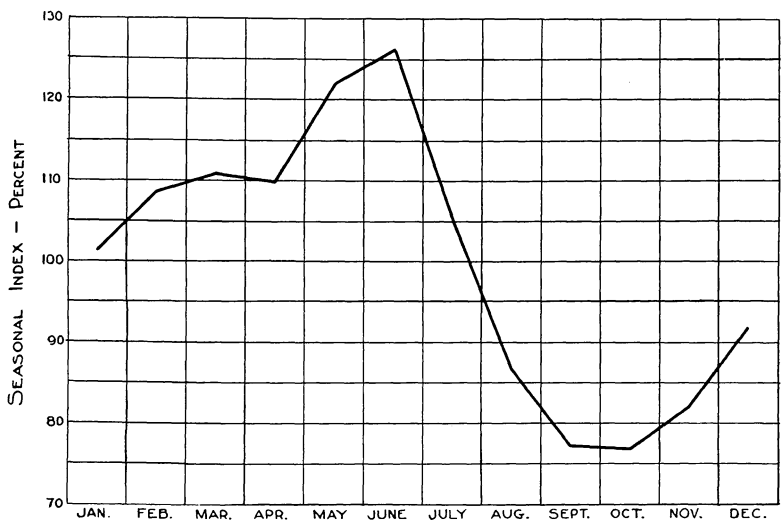

FIG. 3. SEASONAL INDEX OF MILK PRODUCTION, TWIN CITY MILK PRODUCERS' ASSOCIATION, 1920-1930

This index has been computed as an average of ratios for each month to a straight line of least-squares fitted to the entire series. Since the data are on a daily average basis, there is no discrepancy because of unequal days in the various months.

The seasonal movement has been changing during the period studied (1918-1932). In order to examine the changes in production for each month, the trend lines shown in Figure 4 were fitted to the average daily milk shipments per shipper for each month. Wide variations are shown. The average increase from year to year for these shipments is shown below for the various months:

January	4.85	May	3.82	September	1.80
February	4.83	June	2.20	October	3.18
March	4.39	July	1.22	November	4.39
April	4.44	August	0.71	December	4.90

This indicates that production has increased relatively most in the winter months, January, February, March, April, November, and Decem-

ber. August production has remained most constant, and July and September have shown only small increases. At the beginning of the period, November showed the smallest daily average. At the end, November was above October, August, and September, the last named being the low month. May increased more rapidly than June and by the end of the period showed the highest average.

Seasonal variations in production are explained by production conditions. During July and August pastures tend to become dry and provide much less feed. Cows are not freshened at this time, and production falls off. Production increases in the fall when silos are opened and more cows freshen.

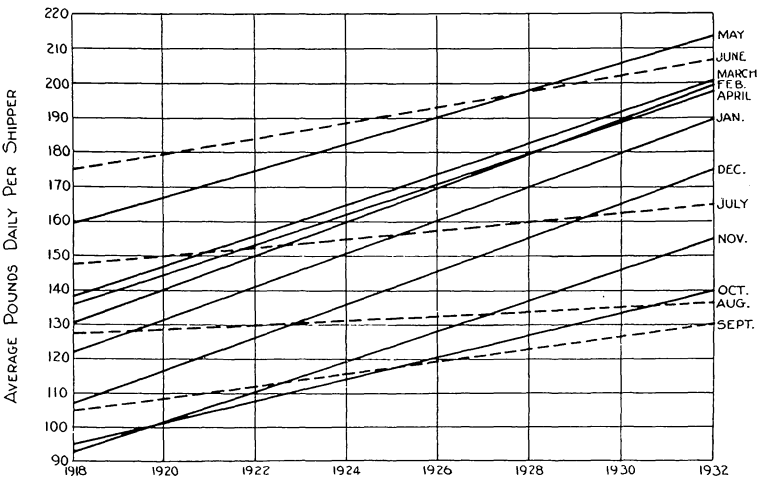

FIG. 4. MONTHLY TREND LINES OF POUNDS OF MILK SHIPPED PER SHIPPER BY MEMBERS OF THE TWIN CITY MILK PRODUCERS' ASSOCIATION, 1918-1932

There has been an increase in the milk shipped per shipper in all months of the year. The winter increase, however, has been much greater than the summer increase and the general pattern of seasonal milk production has shifted considerably during the period.

Changes in production for individual shippers tend to be greater than for the group as a whole. All shippers do not reach their high or low productions at the same time, consequently there is some tendency for individual variations to be ironed out by such differences. However, the variation in total production is greater than that of some of the more stable producers. Farmers who produce milk primarily for the fluid market probably tend to have impressed upon them the importance of greater uniformity of supply than those producing mainly for manufacturing purposes.

Farmers' production programs are determined largely by economic considerations. The shift to greater fall and winter production is no doubt due mainly to such considerations. Somewhat higher prices for milk and milk products during that period of the year are one inducement. Utilization of labor is important. Heavier production during the

winter period comes at a time when labor requirements for crops are at a minimum. This may be an explanation of the low production in September. Feed prices also are a factor, for when these are low relative to the prices of dairy products their use is encouraged.

Effects of uneven production.—With a relatively stable demand for fluid milk and cream, uneven production means a surplus or shortage. The problem becomes serious in areas where there are no available supplies to draw on in times of shortage and where adequate facilities for handling surplus are lacking. In regions where dairying is engaged in primarily to supply fluid requirements, a more uniform production becomes highly important. The Twin City area is differently situated in that supplies are more than sufficient for fluid needs at all seasons and adequate facilities for taking care of surplus milk are available. However, this does not mean that there need be no concern over seasonal variation. The Twin City Milk Producers' Association builds up outlets for its manufactured products as well as for the milk sold in fluid form. These outlets must be kept supplied constantly if they are to be retained. For instance, bakeries and candy manufacturers use large amounts of freshly condensed milk every day. The supply to meet this need must be available in periods of low production as well as in periods of high production. In spite of the large excess of milk over fluid requirements, there are occasions in periods of low production when the association must draw upon outside sources in order to meet the needs of buyers of manufactured products.

Various forms of base-surplus plans to bring about more uniform production are in use in many metropolitan milk markets. While these plans have been helpful in bringing about greater uniformity in production, they are best suited to markets where most of the supply is used by the fluid trade. It is doubtful whether a plan of this kind could be satisfactorily adapted to a situation such as that in the Twin City market, where fluid milk is a minor rather than the major outlet. In such a market there necessarily must be a close relationship between the prices of fluid milk and of the milk going into manufactured products. It is this situation which has kept the association from attempting price plans similar to those in vogue in many other markets.

Prices Paid Producers

The yardstick which members employ in measuring the value of a cooperative organization to them is that of price and price comparisons. An organization must depend for its existence upon the performance of services and unless the results of these services are reflected in prices comparing favorably, everything considered, with those obtainable from alternative outlets it is not likely to continue. The services performed by the Twin City Milk Producers' Association are those connected with arriving at a price to be paid by dealers, the maintenance and improvement of quality, checking on tests and weights, the manufacture of surplus milk, and the marketing of the resultant products. As already explained, the price paid producers is a pooled price, averaging the returns from the sale of milk in fluid and manufactured form. The base price arrived at in this way is for milk f.o.b. the Twin Cities. For milk

delivered elsewhere, zone charges representing the costs of transportation from the respective plants to the Twin Cities are deducted. The farmer also has to bear the cost of delivery from his farm to the plant in his district. These deductions need to be taken into consideration in order to arrive at the net price paid at the farm.

Table 10. Price Paid to Members by Twin City Milk Producers' Association for 3.5 Per Cent Milk, 1919-1933

Month	1919	1920	1921	1922	1923	1924	1925	1926
				Dollars per cwt.				
January	$2.30	$3.15	$2.65	$1.95	$2.68	$2.48	$2.20	$2.35
February	2.57	3.05	2.40	1.90	2.50	2.41	2.20	2.25
March	3.12	2.80	2.33	1.90	2.47	2.20	2.23	2.20
April	3.00	2.90	2.25	1.93	2.42	1.80	2.23	2.12
May	2.95	2.70	1.75	1.86	2.35	1.80	2.20	2.15
June	3.00	2.70	1.60	1.82	2.25	1.85	2.20	2.18
July	3.05	2.57	1.80	2.00	2.35	1.85	2.20	2.25
August	3.15	3.21	2.15	2.10	2.75	2.20	2.33	2.27
September	3.10	3.25	2.25	2.42	2.68	2.20	2.65	2.32
October	3.10	3.42	2.25	2.55	2.62	2.20	2.70	2.41
November	3.15	3.23	2.25	2.65	2.50	2.25	2.70	2.50
December	3.15	3.00	2.10	2.80	2.50	2.22	2.65	2.52
Average	$3.05	$3.00	$2.15	$2.16	$2.50	$2.12	$2.37	$2.29

Month	1927	1928	1929	1930	1931	1932	1933	1934	1935
January	$2.48	$2.57	$2.50	$2.13	$1.58	$1.30	$0.94	$1.25	$1.72
February	2.50	2.50	2.55	2.07	1.47	1.12	0.85	1.35	1.74
March	2.50	2.52	2.50	2.00	1.50	1.10	0.73	1.30	1.70
April	2.50	2.48	2.50	2.06	1.42	1.05	0.83	1.30	1.74
May	2.35	2.42	2.34	1.94	1.40	1.00	0.86	1.36	1.55
June	2.31	2.43	2.33	1.94	1.38	0.97	1.05	1.35	1.42
July	2.31	2.48	2.37	2.05	1.48	1.02	1.38	1.37	1.47
August	2.38	2.56	2.47	2.17	1.62	1.22	1.23	1.51	1.49
September	2.48	2.65	2.60	2.13	1.70	1.24	1.32	1.57	1.50
October	2.60	2.64	2.50	2.10	1.65	1.18	1.30	1.57	1.57
November	2.63	2.60	2.42	1.96	1.55	1.09	1.22	1.53	1.61
December	2.63	2.61	2.30	1.75	1.46	1.16	1.24	1.55	1.73
Average	$2.29	$2.54	$2.45	$2.02	$1.52	$1.12	$1.08	$1.42	$1.60

The monthly prices paid producers on the basis of delivery at the Twin Cities for 1919-1935 are shown in Table 10. The unweighted, average annual price paid for 100 pounds of milk (f.o.b. city) during this period ranged from a high of $3.05 in 1919 to a low of $1.08 in 1933. The highest during this period was $3.42 in October 1920, and the lowest, $0.73 in March 1933. A distinct seasonal movement in these prices may be noted, an upward trend being shown from June to October, followed by a decline until the following June. While less extreme than the fluctuations in supply, the changes in price are related to changes in supply. Seasonal variation in pool prices is the result of combined action of prices and quantities. Thus, in June, for example, when production is high, a smaller proportion of the total milk is sold for fluid purposes resulting in a lower pool price. Moreover, high pro-

duction during the spring and summer results in lower prices for manufactured products. The distributors' buying prices also tend to be somewhat lower in the summer months.

There is a close relationship between the wholesale price of butter in New York and the prices for fluid milk and the prices to producers in the Twin City area. This indicates the important bearing which the price of manufactured dairy products has upon the price that can be obtained for fluid milk in a region of heavy surplus production. Comparisons indicate that the prices paid by the association to its members average somewhat higher than those of other organizations in the area.[8] This is to be expected because fluid milk prices ordinarily are above those of manufactured products. In addition, the association no doubt possesses some advantages in more complete utilization of the products and in devoting them to the uses giving the best returns.

Should the Association Retail Milk?

The suggestion frequently has been made that an organization as well established as the Twin City Milk Producers' Association ought to distribute milk directly to the consumer and retail outlets instead of depending upon distributors to render this service. This view has been most evident at times when producers' prices have been low and hence the margins of distributors large compared with the price paid farmers. The association's officers have given consideration to this matter, but have come to the conclusion that it would be inadvisable to extend its activities into this field.[9]

A number of points are deserving of attention in connection with such a proposal. For one thing, present distributing facilities represent a large investment of capital. Were the organization to enter this field, it would have to have capital for plants and delivery equipment and for operating purposes. Buying of existing facilities would involve an investment of probably 8 million dollars or more, or approximately $1,000 per member. Few members stand ready to make such an investment.

If the association established its own plants or bought only part of the present facilities, those not acquired would seek to retain their business. They probably would be unwilling to continue buying their supply from the association, especially in view of the fact that there is an ample supply of milk outside the membership. It is only natural to expect that dealers would not care to continue to buy milk from an organization which competes with them for the consumers' business. The association would either have to acquire all of the existing business or face the loss of part of its present share in the fluid milk supply. The former would entail a heavy capital outlay and result in the purchase of some facilities which probably would not be needed in a unified system. The latter would mean that a larger share of the milk would have to be manufactured than at present. If the association obtained some gains from its retail business, these might be more than offset by loss in the amount of its milk sold as fluid milk.

[8] See, for instance, Twin City Milk Producers' Association Bulletin for December, 1931.
[9] See, for instance, the association's bulletin of July, 1932.