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St. Louis Milk Problems With Suggested Solutions



University of Illinois
Agricultural Experiment Station
Bulletin 412

Acknowledgment

For the willingness with which various organizations and agencies in the St. Louis milk-producing and sales area have supplied information essential to this study, the author expresses his sincere appreciation. Producers' associations, distributors, consumers' organizations, condenseries, and milk haulers have given the study their hearty support.

A substantial part of the funds used in financing the project was supplied by the St. Louis Milk Market Administration thru the interest of the Administrator, Mr. Fred L. Shipley, who realized the need for facts as a basis for market decisions. In accepting these funds the University adhered to its established policy of reserving the right to publish the findings in a thoroly impartial manner thru such channels as it might choose.

It is hoped that this report of milk-producing and marketing conditions in the St. Louis area will help to give all those interested a clearer understanding of the economic problems involved in placing so important a commodity before the consumers of the area and will assist them in working out just solutions.

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St. Louis Milk Problems, With Suggested Solutions

By R. W. BARTLETT, Assistant Chief in Agricultural Economics¹

THE ST. LOUIS milk sales area has experienced rapid increases in population during the past thirty-five years. Confined to a city of 605,000 in 1900, the area (Fig. 1) now includes approximately 1.3 million people, or almost twice the earlier number.

Coincident with the rapid growth in the size of this market has occurred a concentration of the business of distributing milk in the hands of relatively few dealers, an expansion of the milkshed (Fig. 2) accompanied with increasing dissatisfaction among producers because of prices paid them for their milk and dissatisfaction among consumers because of the quality and cost of the milk delivered to their doors. Producer dissatisfaction has resulted in numerous "strikes." Consumer dissatisfaction has recently been evidenced by the development of consumer organizations with various objectives, including that of improving the quality of the milk sold in the area.

Concerted effort to improve milk-marketing conditions in this area culminated in the adoption, on November 25, 1933, of a federal milk marketing agreement approved by the Agricultural Adjustment Administration under the authority of the Secretary of Agriculture, and a federal milk license, which became effective March 2, 1934.

The purposes and powers of the license are broad in nature. Each of its provisions is capable of interpretations and applications vitally affecting all groups—producers, distributors, and consumers—interested in the milk industry. It is therefore important that the policies developed under this license shall be mutually beneficial and shall tend to promote harmonious solutions of the problems that arise from time to time. It was in order to have a factual basis on which desirable policies might be determined that the Milk Market Administrator arranged for the study reported in this bulletin.

No attempt has been made by the author to formulate sure remedies for all the problems that confront the dairy industry in this area. The aim has been first to present the facts bearing on the situation and then to offer suggestions that may help to solve some of the more vexing problems in this market.

¹The author acknowledges the assistance of T. R. Hedges, B. T. Inman, W. H. Casky, and Edgar Burtis, who supervised the assembling and tabulation of the data for different sections of this study.

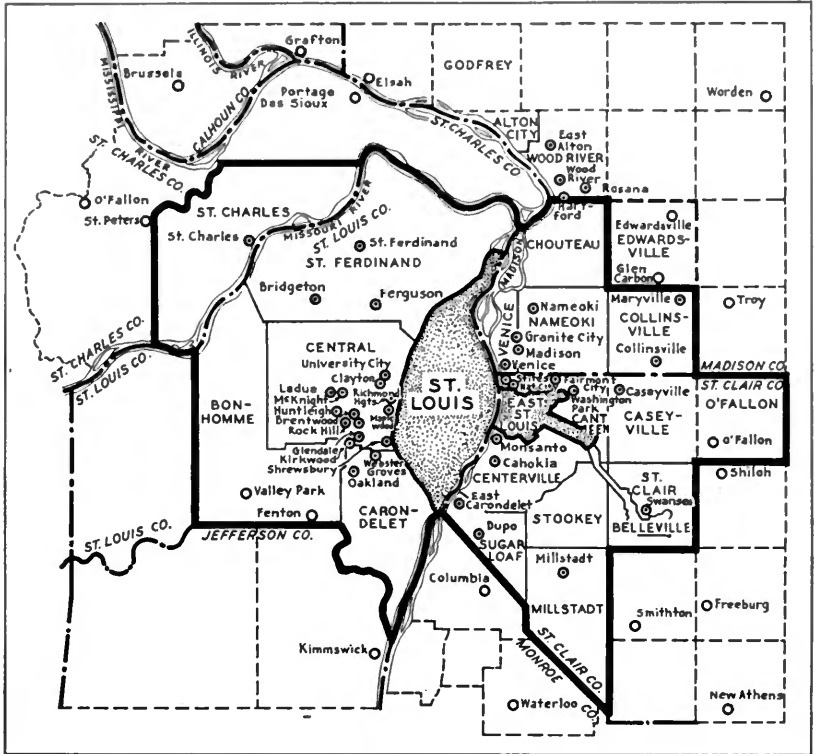


FIG. 1.—THE ST. LOUIS MILK SALES AREA AS DEFINED BY FEDERAL MILK LICENSE, NOVEMBER, 1934

The St. Louis milk sales area is shown within the heavy black lines. It includes approximately 832 square miles and 1.3 million people, of which about 400,000 are outside the 26 Census districts of the city.

PRESENT MILK CONSUMPTION IN ST. LOUIS

Daily Per-Capita Consumption

The daily per-capita consumption of milk at St. Louis in May, 1934, was the lowest of the 14 largest cities in the United States, all these cities having populations of more than 500,000 (see cover illustration and Table 1).

The people of Boston had the highest per-capita consumption, a daily average of more than $\frac{3}{4}$ (.77) pint; whereas in St. Louis the average daily consumption was .42 pint. St. Louis consumption was only one-third the amount recommended by nutrition authorities and only about half the amount generally considered as the minimum for

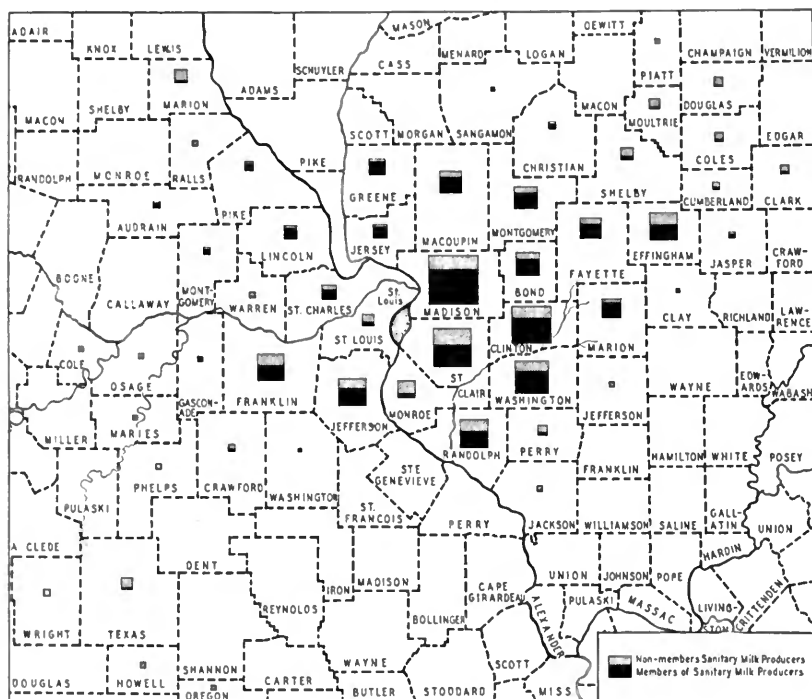


FIG. 2.—VOLUMES OF MILK PRODUCED IN THE ST. LOUIS MILKSHED FROM JUNE, 1933, TO MAY, 1934

The four counties producing the greatest volumes of milk for the St. Louis market are Madison, St. Clair, Clinton, and Washington—all in Illinois. Approximately 417 million pounds of milk were produced during the above period, of which 64 percent was produced by members of the Sanitary Milk Producers.

the maintenance of good health. Even the per-capita consumption in Boston was considerably below the latter standard.

The consumption of milk in the different Census districts of St. Louis (Fig. 3) varied even more widely than among the 14 largest cities.¹ In Districts 14 and 16 it averaged nearly $\frac{3}{5}$ pint per person per day; whereas in District 21 it was less than $\frac{1}{5}$ pint. In eleven districts it was higher than the average for the area; whereas in thirteen districts it was lower than the average. Districts 1 and 8 had

¹Unpublished data from a study made by C.W.A. workers under the direction of Mrs. M. C. Harrington of the St. Louis District Dairy Council. Parts of the study were published by the St. Louis Department of Public Welfare, Division of Health, in "Food Habits Survey," 1934.

TABLE 1.—DAILY CONSUMPTION OF MILK IN THE 14 LARGEST MILK SALES AREAS IN THE UNITED STATES, ALL HAVING POPULATIONS OF MORE THAN 500,000, MAY, 1934*

Area	Amount of milk sold daily	Population of area	Daily consumption of milk per person
	<i>thousands of pints</i>		<i>pint</i>
Boston.....	1 574.5	2 052 000	.767
Minneapolis (1933).....	372.2	516 000	.721
New York.....	7 173.9	10 275 400	.698
Los Angeles (June, 1934).....	1 163.9	2 485 000	.650
Milwaukee.....	490.8	761 800	.644
Cleveland.....	880.2	1 385 400	.635
Philadelphia.....	1 594.4	2 674 100	.596
Pittsburgh.....	802.0	1 400 800	.573
Chicago.....	2 674.4	4 952 700	.540
Detroit.....	1 161.7	2 174 000	.534
San Francisco (1932).....	339.4	645 700	.526
Buffalo.....	282.6	586 300	.482
Baltimore (Jan.-June, 1934).....	448.0	1 047 500	.428
St. Louis.....	551.7	1 303 100	.423

*For more detailed data, see Appendix, Tables 18 and 19, pages 161 and 162.

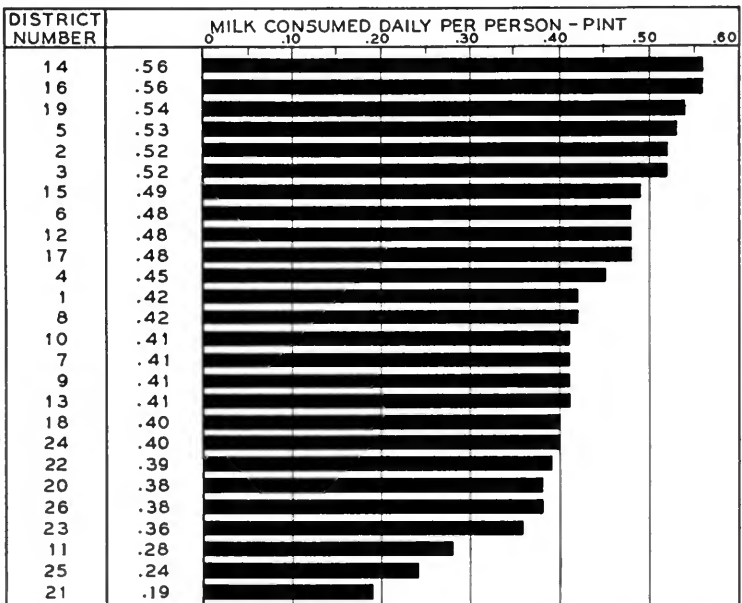


FIG. 3.—DAILY CONSUMPTION OF MILK PER PERSON IN THE DIFFERENT CENSUS DISTRICTS OF THE CITY OF ST. LOUIS, 1934

In Districts 14 and 16, where family incomes are relatively high (see Fig. 6), the daily consumption of milk per person averaged nearly three times as much as in District 21, where incomes are low. The average consumption in the entire sales area was $\frac{2}{5}$ (.42) pint per person daily.

the same per-capita consumption as the average for the entire area, .42 pint per day.

The information on per-capita consumption given above was obtained from replies to a questionnaire answered by 8,136 housewives in St. Louis. Every family on at least one street in each district and other families scattered thru the district were interviewed (Fig. 4).

Benefits From Larger Consumption

The per-capita consumption of milk is coming to be recognized by leaders in the whole-milk¹ industry as one of the best standards for measuring the efficiency of the industry. A high per-capita consumption of high-quality milk would benefit consumers, producers, and distributors alike.

From a health standpoint a quart of milk a day for children and a pint for adults is recommended by nutrition authorities² as highly desirable. On a weighted basis this is equivalent to about $1\frac{1}{3}$ pints daily per person; yet the average daily consumption of milk in the United States is less than half this amount, and in many markets, including St. Louis, it is not more than one-third. Hence from the viewpoint of consumers, increased per-capita consumption of milk in the St. Louis area is of material importance.

To farmers, increased per-capita consumption of milk means higher gross incomes, for milk utilized in fluid form commands a higher price than that utilized as cream or manufactured into other products. If the per-capita consumption of milk in the St. Louis sales area were increased to the Boston rate, producers in the St. Louis milkshed would benefit to the extent of about \$1,300,000 a year.³ This would mean an average increase of about \$125 a year to each producer. Since the present whole-milk demand in this market is only about half the total production in this dairy district, such an increase in whole-milk sales could be supplied largely by dairymen now in the market.

Other increases that might be expected to occur in the income of producers in the St. Louis milkshed as the result of certain increases in per-capita consumption are shown in Fig. 5.

Milk dealers in the St. Louis area would benefit by a substantial increase in milk consumption if the increased sales were to be handled

¹In this bulletin the terms whole milk, fluid milk, fresh milk, and Class I milk are used synonymously.

²Recommended by Drs. E. V. McCollum, H. C. Sherman, and M. S. Rose.

³This represents the net gain that would accrue to producers as a result of their receiving the Class I price for the additional Class I sales, instead of the Class III price for this volume, as at present.

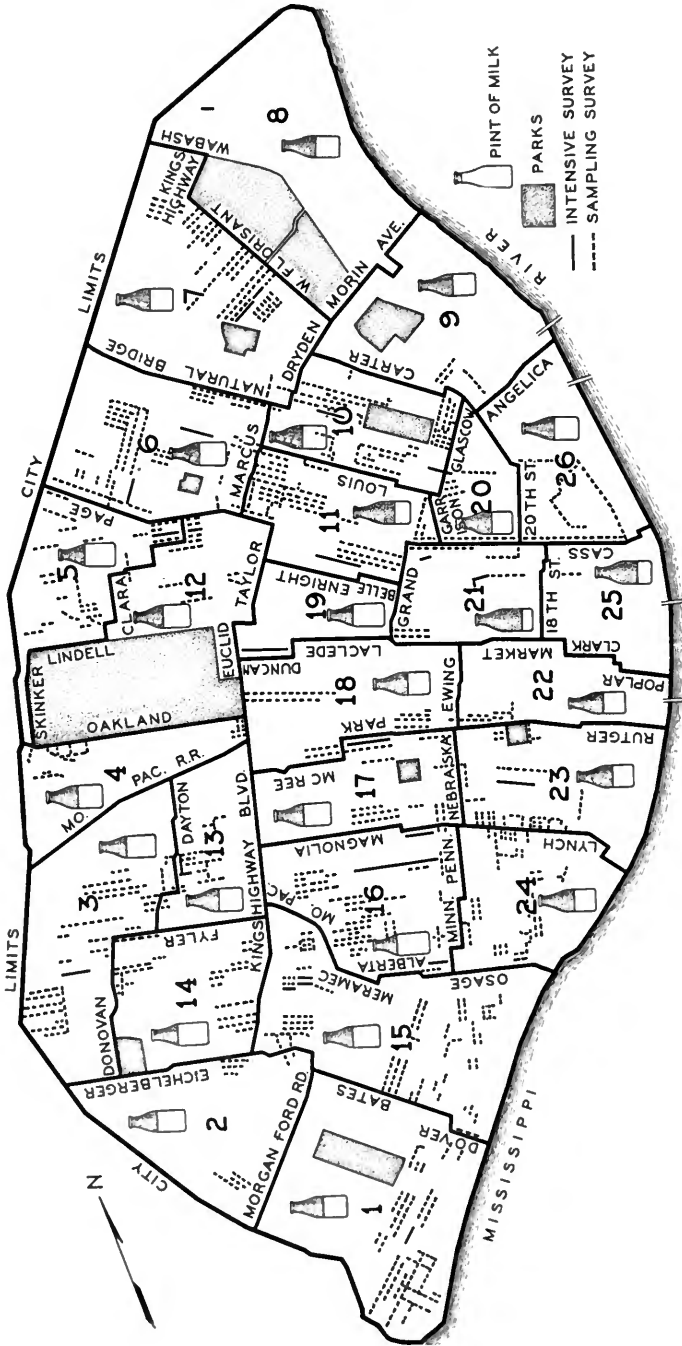


FIG. 4.—MAP OF MILK CONSUMPTION SURVEY IN ST. LOUIS, 1934

In each Census district in St. Louis an intensive survey or a sampling survey, or both, was made in the early part of 1934. More than 8,100 families were interviewed, each family reporting the amount of milk consumed, the number of individuals in the family, and other facts concerning the family's food habits. The approximate milk consumption per person in each district is indicated by the amount of milk shown in the pint bottle.

by the present number of distributors, for very little additional equipment would be needed in order to handle the larger volume, and unit operating costs would consequently be reduced.

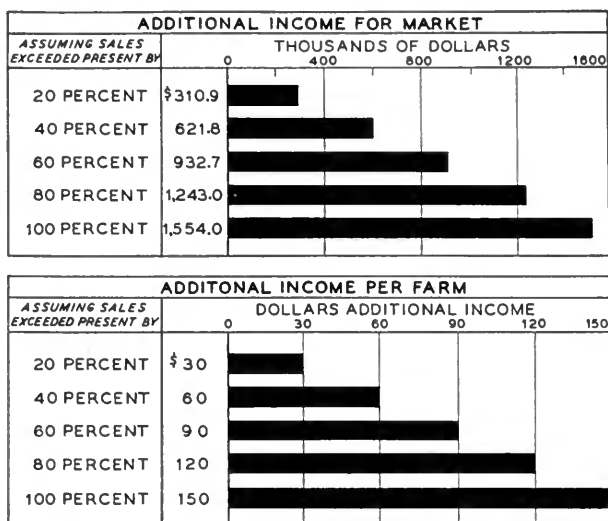


FIG. 5.—HOW FARMERS IN THE ST. LOUIS MILKSHED WOULD BENEFIT BY CERTAIN PROPORTIONAL INCREASES IN MILK CONSUMPTION IN THE ST. LOUIS SALES AREA

If the per-capita consumption of milk in St. Louis were increased to that of Boston, fluid-milk sales would be increased about 83 percent. Such an increase would bring producers about \$1,300,000 more income annually, or an average of about \$125 to each producer. Even smaller increases would have marked effect on producer income.

CAUSES OF LOW MILK CONSUMPTION IN ST. LOUIS

Low Family Incomes

The low per-capita consumption of milk in St. Louis is undoubtedly due basically to the large number of families having low incomes. On the basis of rentals reported in the 1930 Census and corrected to a 1934 basis, about one-third of the families had incomes averaging about \$800 a year, another third about \$1,600 a year, and the remainder about \$3,650 a year (Table 2). The average family income in each of the St. Louis Census districts is shown in Fig. 6. The lowest was \$999 in District 25 and the highest \$3,255 in District 5.

TABLE 2.—NUMBER OF FAMILIES PAYING RENTALS INDICATED, AND AVERAGE INCOMES OF CERTAIN INCOME-GROUPS, ST. LOUIS, 1930 AND 1934

Monthly rentals ^a	Mid-point of monthly rental	Yearly average		Number of families 1930 ^a	Weighted average income	
		Rental	Income ^b		1930	1934 ^c
<i>Group 1</i>						
Under \$10.0.....	\$ 7.50	\$ 90	\$ 360	4 144	.....	.....
\$10-14.9.....	12.50	150	600	12 375	.....	.....
\$15-19.9.....	17.50	210	840	18 897	.....	.....
\$20-29.9.....	25.00	300	1 200	36 597	.....	.....
Total and average..	.....	.....	.....	72 013	\$ 954	\$ 814
<i>Group 2</i>						
\$30-49.9.....	\$40.00	\$ 480	\$1 920	64 537	\$1 920	\$1 638
<i>Group 3</i>						
\$50-74.9.....	\$ 62.50	\$ 750	\$ 3 000	38 813	.....	.....
\$75-99.9.....	87.50	1 050	4 200	15 777	.....	.....
\$100-149.9.....	125.00	1 500	6 000	11 642	.....	.....
\$150-199.9.....	175.00	2 100	8 400	3 600	.....	.....
\$200 and over.....	225.00	2 700	10 800	2 582	.....	.....
Total and average..	.....	.....	.....	72 414	\$4 290	\$3 659

^{a, b, c} For footnotes giving sources of data, see page 181, Appendix.

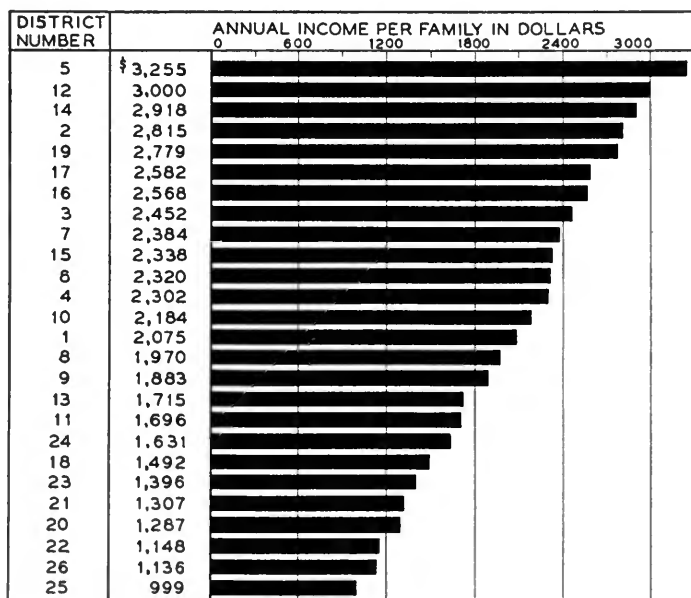


FIG. 6.—FAMILY INCOMES IN THE DIFFERENT CENSUS DISTRICTS OF ST. LOUIS, 1934

The income in the district with the lowest average was less than one-third as large as the income in the two districts with the highest averages.

The effect of low incomes on milk consumption in St. Louis is shown in summarized form in Table 3. In those districts in which family incomes averaged less than \$1,600 a year, daily milk consumption averaged $\frac{1}{3}$ (.33) pint per person; whereas in districts in which incomes averaged \$2,400 a year or more, milk consumption averaged more than $\frac{1}{2}$ (.52) pint per person daily.

TABLE 3.—PER-CAPITA CONSUMPTION OF MILK BY INCOME-GROUPS, ST. LOUIS, 1934

Income per year ^a	Number of districts	Weighted average annual income	Daily per capita consumption of milk ^a	
			Pint	Percent of average
Under \$1600.....	7	\$1 279	.333	79
\$1600-\$1999.....	5	1 729	.359	85
\$2000-\$2399.....	6	2 276	.449	106
\$2400 and over.....	8	2 805	.520	123
Average for city.....	...	\$2 022	.423	100

^aSee Table 20, page 163, Appendix.

The relationship between incomes and milk consumption, district by district, is shown graphically in Fig. 7. In District 23, where the average annual income in 1934 was \$1,396, the average daily milk consumption was about one-third (.36) pint per person; whereas in Districts 14 and 16, where family incomes averaged \$2,918 and \$2,568 respectively, the daily per-capita consumption was .56 pint per person.

Thus milk consumption is shown to be very directly influenced by amount of family income.

Other Foods Relatively Cheaper Than Whole Milk

The retail price of a quart of whole milk delivered to consumers, declined from 13 cents in November, 1930, to 10 cents in March, 1932, and then advanced to 11 cents in December, 1933, at which figure it has remained until the present time (January, 1935) (Table 4).

Measured by the relationship existing between retail prices of fluid milk during the five years 1925-1929 and the prices of 42 commonly used foods, the prices for milk during 1930-1934 were high, the index price of "all foods"¹ declining about 30 percent² whereas if the retail

¹In this bulletin the average retail price of "42 foods" is used synonymously with the average retail price of "all foods."

²It might be added that even during the base period, 1925-1929, prices of all foods changed but little and milk prices remained unchanged.

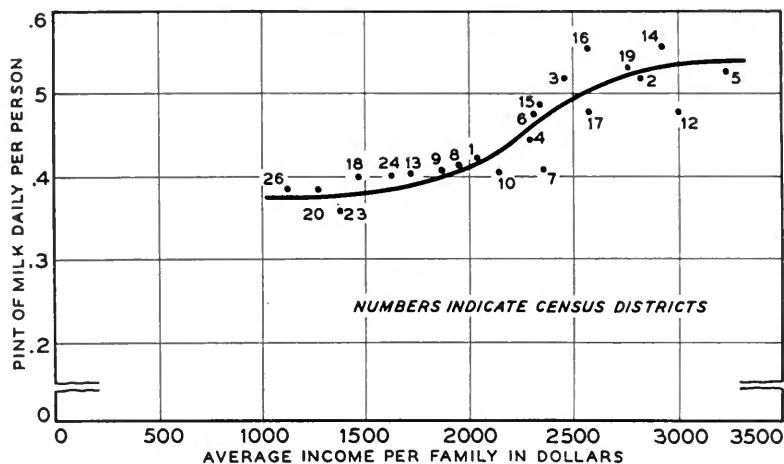


FIG. 7.—MILK CONSUMPTION PER PERSON AND AVERAGE FAMILY INCOME IN THE VARIOUS CENSUS DISTRICTS OF ST. LOUIS, 1934

The numbers in the body of the chart indicate Census districts. In the districts where family incomes are low, at the left of the graph, less milk is consumed than in the districts where family incomes are high. As incomes increase, milk consumption increases. Districts consisting of more than 35 percent Negro population are not included above because much less milk is used by Negroes than whites even when on the same income-level.

TABLE 4.—CHANGES IN RETAIL DELIVERED PRICE OF MILK IN ST. LOUIS, 1925-1934^a

Time	Cents per quart	Price index (1925-27 = 100)
January, 1925, to November, 1930.....	13	100.0
December, 1930, to August, 1931.....	12	92.3
September, 1931, to February, 1932.....	11	84.6
March, 1932, to November, 1933.....	10	76.9
December, 1933, to January, 1935.....	11	84.6

^aFrom U. S. Department of Agriculture Yearbooks and U. S. Bureau of Agricultural Economics fluid-milk reports.

price of milk had declined similarly it would have been 2 cents a quart lower in 1933 and 1934 than it actually was³ (Fig. 8).

³In the winter of 1932 and up to June, 1933, distributors offered for sale a low-test milk at prices 2 cents a quart under the usual retail milk prices in order to compete with the substandard milk offered by peddlers. About 20 percent of Class I milk during this period was sold at these prices. Thus while the sale of this substandard milk had some effect upon the total sales of milk, it was of no great significance to the market as a whole because of the short period during which it was sold and the relatively small volume that was sold.

This discrepancy between the retail price of milk and of competing foods at a time when consumers' incomes were very low was another basic factor causing low consumption of milk in this city.

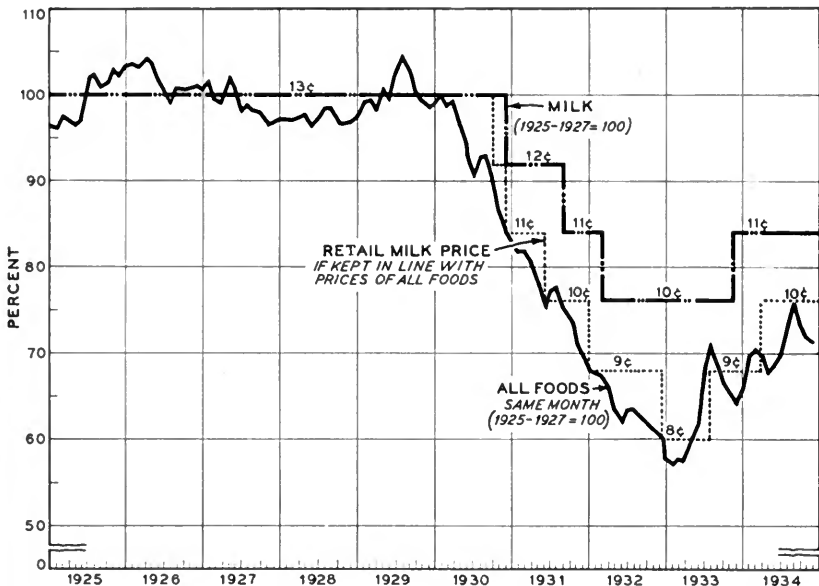


FIG. 8.—CHANGES IN RETAIL PRICES OF MILK AND OF "ALL FOODS" IN ST. LOUIS, BY MONTHS, 1925-1934

Since 1930 the retail price of milk in St. Louis has been high in relation to prices of other foods. If it had changed in the same proportion as the average retail price of "all foods" (42 commonly used foods) it would have been 2 cents a quart lower in 1933 and the early part of 1934 than it was.

The relative position of fresh-milk prices during the first eight months of 1934 in relation to the prices of 15 other commonly used foods is shown in Fig. 9. The retail price of fluid milk stood next to the highest in this list of foods, compared with the prices of the same foods in 1925-1927. Foods that stood at prices relatively higher than the average of "all foods" were, in the order named, canned peas, fresh milk, round steak, canned tomatoes, bread, cabbage, sugar, and pork chops. Foods that stood at relatively lower prices were evaporated milk, oranges, corn, eggs, potatoes, butter, coffee, and oleomargarine.

A general rise in prices of foods in the late summer of 1934, without a corresponding increase occurring in the retail price of milk, has

somewhat narrowed the discrepancy between milk and other foods, milk dropping to fifth place on the list.

Evaporated Milk an Effective Competitor

Evaporated milk, one of the principal direct competitors of whole milk, has held a relative price advantage at St. Louis during recent years. Compared with the average prices of these commodities in 1925-

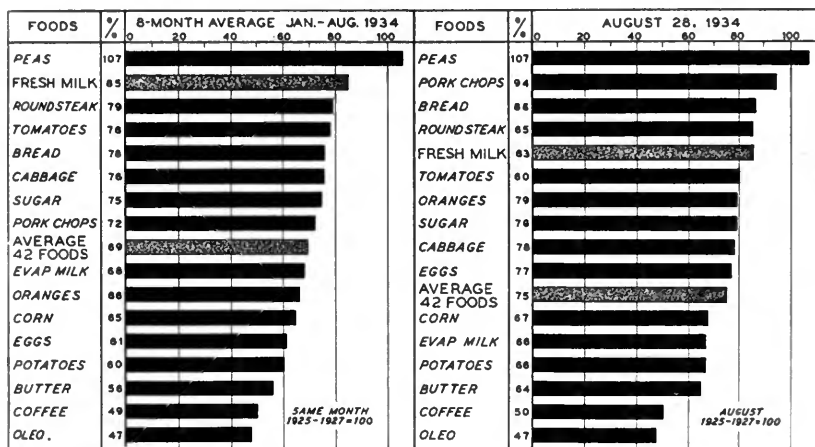


FIG. 9.—RETAIL PRICE INDEXES OF SIXTEEN COMMONLY USED FOODS, in St. Louis, JANUARY TO AUGUST, 1934, AND AUGUST 28, 1934

Out of a series of 16 foods in common use, milk during the eight months January to August, 1934, held closer to 1925-1927 price-levels than any of the others, with the exception of one. When consumer incomes are greatly reduced, consumers will naturally buy the foods whose prices have declined most.

1927, the retail price of evaporated milk at this center from 1931 to 1934 averaged only 80 percent as high as the retail price of whole milk (Fig. 10).

Stated in another way, the retail price of a quart of whole milk in 1927 was 3 cents higher than the retail price of a 14½-ounce can of evaporated milk.¹ By 1932 this difference had increased to 4 cents and in 1934 to 4½ cents (Fig. 11).

While no data are available showing the consumption of evaporated milk in St. Louis, if the same tendency has existed there as has existed

¹Prices of evaporated milk were formerly quoted on the basis of a 16-ounce can. January, 1925, to December, 1931, prices for a 16-ounce can were converted to 14½-ounce units by multiplying by .90625.

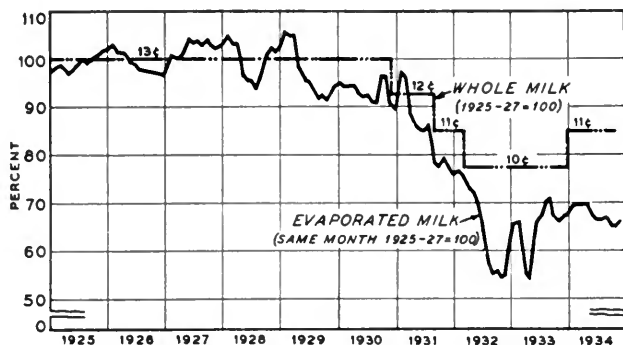


FIG. 10.—CHANGES IN AVERAGE RETAIL PRICES OF WHOLE AND EVAPORATED MILK IN ST. LOUIS, BY MONTHS, 1925-1934

From 1931 to 1934 the retail price of whole milk in St. Louis was high compared with the retail price of evaporated milk.

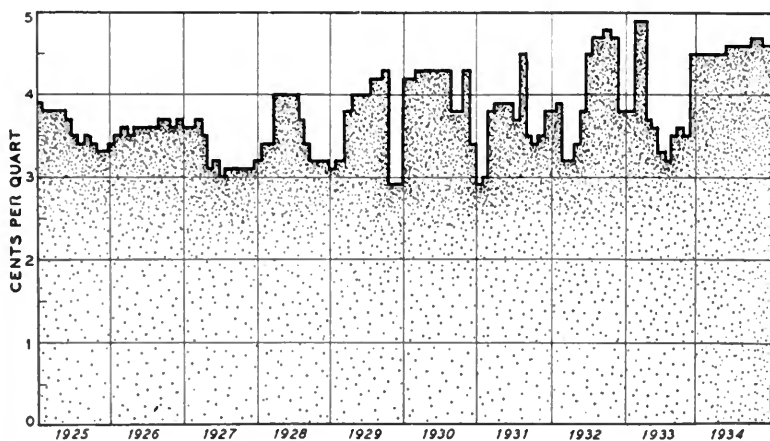


FIG. 11.—AMOUNTS BY WHICH THE RETAIL QUART PRICE OF WHOLE MILK EXCEEDED THE AVERAGE RETAIL PRICE OF A 14½-OUNCE CAN OF EVAPORATED MILK, IN ST. LOUIS, BY MONTHS, 1925-1934

In 1927 the retail price of a quart of whole milk averaged 3 cents higher than the retail price of a 14½-ounce can of evaporated milk. During the greater part of 1934 the price of a quart of whole milk was 4½ cents or more above the price of evaporated milk. (The price of a 16-ounce can of evaporated milk, commonly sold until December, 1931, was converted to the equivalent of a 14½-ounce can by multiplying it by .90625.)

in 15 other cities, the wide price differential that has prevailed between evaporated milk and retail quarts of whole milk has led to a marked

increase in the consumption of evaporated milk and has been one of the causes of low whole-milk consumption in this city.

The relation between the per-capita consumption of evaporated milk in 15 cities of the United States and the differential between whole-milk prices and evaporated-milk prices is shown in Table 5 and Fig. 12. It will be noted from the table that in Minneapolis, where

TABLE 5.—EVAPORATED MILK CONSUMPTION IN 15 CITIES IN MAY, 1934, AND AMOUNT BY WHICH THE PRICE OF FLUID MILK EXCEEDED THE PRICE OF EVAPORATED MILK FROM JUNE, 1932, TO MAY, 1934

(Data on consumption obtained by Consumers' Council of the Agricultural Adjustment Administration*)

City	Per-capita consumption of evaporated milk May, 1934	Amount by which retail quart price of fluid milk exceeded price per can of evaporated milk, June, 1932—May, 1934
	<i>lbs.</i>	<i>cents</i>
Minneapolis.....	10.2	.72
Providence.....	12.0	5.79
Washington, D. C.....	14.2	6.25
Cincinnati.....	14.8	3.65
Chicago.....	15.2	3.30
Philadelphia.....	16.1	3.30
Pittsburgh.....	16.1	3.70
Boston.....	17.5	4.25
Kansas City, Missouri.....	18.4	3.13
Atlanta.....	19.1	4.99
Baltimore.....	19.2	4.38
Los Angeles.....	20.1	4.67
Portland, Oregon.....	21.0	3.72
San Francisco.....	23.2	5.62
Seattle.....	24.0	3.58

*The per-capita consumption of evaporated milk for 59 cities in the United States was ascertained by a survey made by the Consumers' Council of the Agricultural Adjustment Administration in May, 1934. In compiling the above table, 30 of the 59 cities for which the U. S. Bureau of Labor Statistics published no retail price data for evaporated milk were excluded. There were also excluded those cities which from June to August had an average temperature of 77° F. or over for thirty years or more, as well as those which in 1930 had populations of 250,000 or less.

there was a price differential of less than one (.72) cent, the annual per-capita consumption of evaporated milk was only 10.2 pounds. At San Francisco, where there was a price differential of 5.62 cents, the annual per-capita consumption was 23.2 pounds. While the data given here do not show an absolutely consistent relationship between price differentials and the consumption of these two forms of milk—other factors evidently being active—when the per-capita consumption of evaporated milk in all these 15 cities is plotted on the same chart as the price differentials (Fig. 12) it becomes evident that the per-capita consumption of evaporated milk tends to increase when the retail price of whole milk is high in relation to the price of evaporated milk.

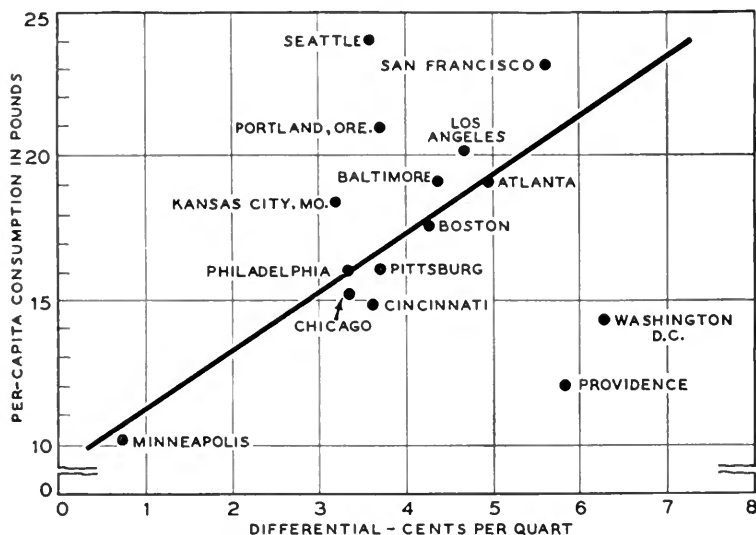


FIG. 12.—EVAPORATED MILK CONSUMPTION TENDS TO INCREASE AS THE PRICE DIFFERENTIAL BETWEEN FLUID MILK AND EVAPORATED MILK INCREASES

If the same tendency has existed in St. Louis as has existed in the above cities, the difference that has prevailed between the retail price of a quart of fluid milk and of an equivalent amount of evaporated milk has been one of the causes of low fluid-milk consumption in this city.

Incidentally evaporated milk is a more forceful competitor of whole milk in St. Louis than in Chicago because the retail price of evaporated milk is usually relatively lower in St. Louis than in Chicago (Fig. 13). The price differential in St. Louis in 1932 was .8 cent per can less than at Chicago, and in 1933 it was .6 cent less.

Hot Summers and Lack of Refrigeration Discourage Use of Fresh Milk

High average temperatures, combined with lack of refrigeration by about 40 percent of the families in the St. Louis milk sales area, constitute another basic factor in the low consumption of fluid milk in this area.

Of the 14 largest cities in the United States, St. Louis has the highest average summer temperature. For the sixty-four years from 1870 to 1933 the temperature at this point during June, July, and August averaged 77.2 Fahrenheit (Fig. 14). This was about 7 degrees higher than at Chicago and more than 18 degrees higher than at San Francisco.

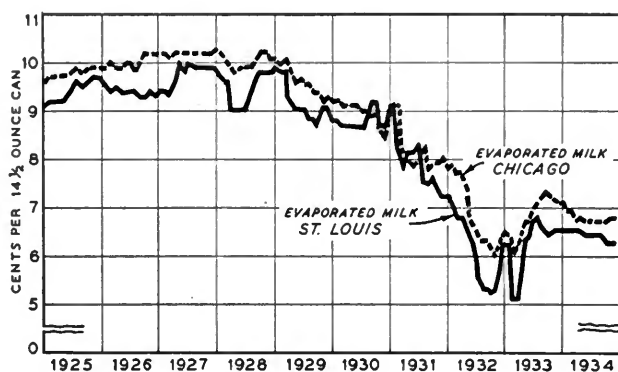


FIG. 13.—AVERAGE RETAIL PRICE OF 14½-Ounce Can of Evaporated MILK IN CHICAGO AND ST. LOUIS, by MONTHS, 1925-1934

The retail price of evaporated milk at St. Louis has usually been lower than at Chicago. That is why evaporated milk is a more forceful competitor of whole milk in St. Louis than it is in Chicago.

14 LARGER CITIES	JUNE-AUGUST TEMPERATURE (°F) 60-YEAR AVERAGE								
	0	10	20	30	40	50	60	70	80
ST. LOUIS	77.2								
BALTIMORE	75.2								
PHILADELPHIA	74.2								
PITTSBURG ⁽¹⁾	72.7								
NEW YORK	71.9								
CHICAGO	70.5								
DETROIT	70.0								
MINNEAPOLIS ⁽²⁾ - ST. PAUL	70.0								
CLEVELAND	69.6								
BOSTON	69.4								
LOS ANGELES ⁽³⁾	69.2								
MILWAUKEE	67.8								
BUFFALO	67.6								
SAN FRANCISCO	58.7								

(1) 56-YEAR AVERAGE (2) 42-YEAR AVERAGE (3) 56-YEAR AVERAGE

FIG. 14.—AVERAGE TEMPERATURES OF 14 CITIES IN THE UNITED STATES IN JUNE, JULY, AND AUGUST, 1874-1933

The summer temperature at St. Louis has been the highest of the 14 largest cities in the United States. For the sixty years from 1874 to 1933 it averaged 77.2° F. This was nearly 7 degrees higher than the temperature at Chicago and more than 18 degrees higher than at San Francisco.

Because of these excessively high summer temperatures, refrigeration is necessary if milk is to be kept sweet. The fact that so many families in St. Louis and St. Louis county have no refrigeration (Table

6) is probably the most important reason why almost a third (31.3 percent) of the families included in this survey stated that they did not buy fresh milk daily (Fig. 15).

TABLE 6.—REFRIGERATING FACILITIES OF FAMILIES IN ST. LOUIS AND ST. LOUIS COUNTY, 1934, AND IN THE UNITED STATES, 1933*

	St. Louis and St. Louis county, 1934	United States, 1933
Total number of families in area.....	266 960	29 904 663
Families using ice refrigeration.....	60 000	.....
Families using mechanical refrigeration.....	101 000	.....
Total families using refrigeration.....	161 000	15 000 000
Families having no refrigeration.....	105 960	14 904 663
Percentage of families having no refrigeration.....	39.7	49.8

*Sources of data are given on page 181, Appendix.

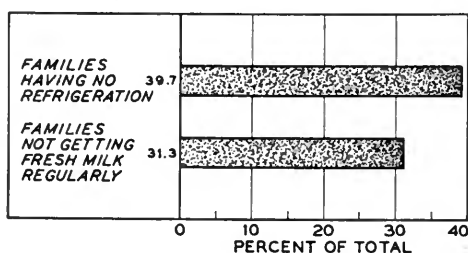


FIG. 15.—PROPORTIONS OF FAMILIES IN ST. LOUIS THAT HAD NO REFRIGERATION AND USED NO MILK REGULARLY IN 1934

The fact that nearly 40 percent of the families in St. Louis have no refrigeration partially explains why about a third of them do not buy fresh milk regularly. Extremely high summer temperatures make refrigeration a necessity in keeping milk sweet.

Nationality Not a Major Cause of Low Milk Consumption in St. Louis

Whether the low per-capita consumption of milk in St. Louis is caused, to any important extent, by the origin of the St. Louis people with respect to race or nationality, can be determined fairly accurately on the basis of a study made in Boston in 1930. The amount of milk which would have been used in St. Louis had the various racial and national groups there used as much milk as the same groups did in Boston is shown in Table 7. On the Boston basis, St. Louis consump-

tion would have been .74 pint daily per person in 1934—nearly twice the actual consumption and only 3½ percent less than the per-capita consumption in Boston. Since three-fourths of the St. Louis people are in the high-consumption nationality groups and only one-fourth

TABLE 7.—THEORETICAL CONSUMPTION OF MILK IN ST. LOUIS IN 1934 IF THE VARIOUS NATIONALITIES IN ST. LOUIS HAD CONSUMED THE SAME AMOUNTS OF MILK AS THOSE IN BOSTON

Nationality	Number of individuals in St. Louis ^a	Daily per-capita consumption in Boston ^b	Theoretical daily consumption of milk in St. Louis	
			Total	Per capita
		<i>pint</i>	<i>pints</i>	<i>pint</i>
Irish.....	31 873	.848	27 028	....
German.....	131 873	.825	108 795	....
Native white.....	438 592	.800 ^c	350 874	....
English, Scotch, and Welsh.....	14 663	.771	11 305	....
Canadian.....	4 466	.720	3 216	....
Miscellaneous.....	82 096	.716	58 731	....
Italian.....	23 817	.488	11 623	....
Negro.....	93 580	.387	36 215	....
All.....	821 960	.767	607 837	.740

^aU. S. Census, 1930.

^bBased on a report prepared by F. V. Waugh and published by the Mass. Agr. Exp. Sta., Sept., 1931, entitled "The Consumption of Milk and Dairy Products in Metropolitan Boston in December, 1930." Figures in Table 5, p. 6, of that report are here corrected to correspond with the daily per-capita consumption of milk at Boston in May, 1934 (see Table 1 herewith).

^cThe majority of native whites in St. Louis are of German descent. Since in Boston the daily per-capita consumption of milk by the German people was found to be higher than that of native whites, the per-capita consumption figure shown here for native whites in St. Louis appears reasonable.

in the low-consumption groups, it is evident that the national or racial origin of the St. Louis people is not a major factor in the low per-capita consumption in that city.

HOW ST. LOUIS MILK SALES MIGHT BE INCREASED

Greater Per-Capita Consumption

Until recently a fairly rapid increase in the population of the United States has made possible an expansion of markets for milk and other dairy products without any increase in per-capita consumption. In late years, however, the rate of population increase in the United States has been declining, and it is not unlikely that within the next thirty years population will become stationary.¹

¹From 1790 to 1880 population in the United States increased at the rate of 3.1 percent annually. During the next thirty years the average annual increase was 2.2 percent. From 1910 to 1930 the rate declined to 1.6 percent annually. During the latter part of the decade 1920 to 1930 the U. S. Census

The population in the St. Louis milk-sales area increased approximately 20 percent between 1920 and 1930, advancing from 1,061,000 to 1,276,000 people. This was an average annual increase of 2 percent. The present rate of increase in the United States as a whole is less than 1 (.9) percent annually. Assuming the same rate of increase in St. Louis as in the United States as a whole, St. Louis would add to its population yearly about ten thousand people.

As previously stated by the writer, "The fact that population is increasing at a declining rate intensifies the problem of bringing about any marked increase in total sales of market milk. Problems of local milk distribution increase when the rate of increase in population declines, since it is less easy for either old or new distributors to find expanding outlets for their products."¹

Considering the foregoing facts, the chief opportunities for producers and dealers in the St. Louis dairy district to increase milk sales would seem to lie, not in serving a new or increasing population, but rather in stimulating a larger consumption of milk per capita among those now living in this sales area. An increase of less than one-hundredth pint per person daily would be equivalent, in its effect on the milk industry, to a 2-percent annual increase in population.

Adoption of Lower Prices for Store Milk

It has been shown (pages 99 to 109) that the low per-capita consumption of milk at St. Louis is attributable to two principal causes: (1) low incomes of consumers, combined with relatively high prices of milk compared with prices of competing foods; and (2) the extreme heat at St. Louis during the summer, combined with lack of refrigeration facilities in the homes of a large number of families in this area.

How to remove these factors that depress milk consumption is suggested by an analysis of store milk prices and sales in St. Louis and their comparison with prices and sales in other large cities, especially in Boston, where the per-capita consumption, as already shown, is the highest of any of the 14 largest cities in the United States.

In New York and Boston, where store sales have constituted an important part of the total sales of milk for a longer period than in any of the other large cities, per-capita sales have been higher than

¹Ill. Agr. Exp. Sta. Bul. 397, p. 427.

Bureau estimated the average increase at .71 percent annually. While authorities do not agree on the exact time, they are in general agreement that a stationary population will be reached within twenty-five to forty years.

in any other large market in the country (except Minneapolis-St. Paul¹) for which sales data are available. The daily consumption of milk in New York from 1929 to 1932 was .778 pint per person, while at Boston from 1930 to 1932 it averaged .849 pint per person.² In May, 1934, these two cities still ranked among the leading cities in per-capita sales of milk (Table 1).

The difference between store prices and prices of retail delivered milk in Boston from 1922 to 1925 usually exceeded 2½ cents a quart (Fig. 16), altho at times the cutting of the retail delivered price narrowed this to only one cent. In New York during the same period, the difference between the store price and the price of delivered milk was even wider than at Boston, because of the sale of bulk milk permitted in New York during this period.³

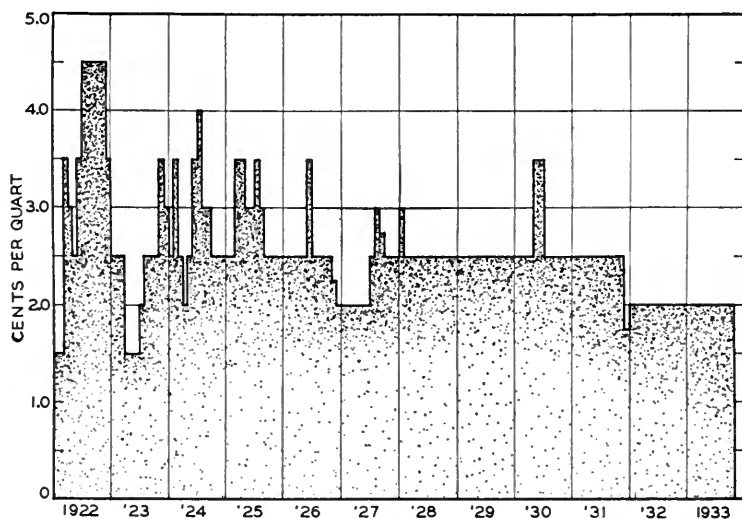


FIG. 16.—DIFFERENCE BETWEEN RETAIL WAGON PRICES OF MILK AND STORE PRICES IN BOSTON, BY MONTHS, 1922-1933

In 1922 stores in Boston sold milk at an average of 3½ cents a quart below the wagon price. After ten years of competition between these two methods of sale, store prices, for the greater part of 1933, were still 2 cents a quart below wagon prices.

¹The high per-capita sales at Minneapolis-St. Paul can be attributed principally to the low retail price of delivered milk prevailing there. From 1929 to 1934 the average retail prices of delivered milk there were the lowest of the 14 largest cities.

²Ill. Agr. Exp. Sta. Bul. 397, p. 445.

³Same, pp. 445-448.

Thus carefully compiled evidence indicates that milk sold in stores at prices below wagon prices tends to result in a greater per-capita consumption.

The next question concerns the margin on which dealers can afford to sell milk to stores. Again we may look to Boston for information.

In Boston in 1934 wholesale milk prices quoted to stores averaged 9.0 cents a quart. This price represented 6.6 cents paid to producers and a gross margin for distributors of 2.4 cents to pay the costs of assembling, pasteurizing, bottling, and delivering to the stores. In St. Louis in 1934, altho the wholesale price of milk per quart quoted to stores averaged 8.9 cents, producers received only 4.5 cents a quart.¹ Thus the distributors' gross handling margin in St. Louis averaged 4.4 cents, or 2 cents more than in Boston during the same period.

The store price of milk to consumers in St. Louis during the past year (1934) has been quoted each month at 10 or 11 cents a quart. If St. Louis distributors had operated on the same margin as Boston distributors, St. Louis consumers willing to buy milk at stores could have bought it at 2 cents a quart less than they did. A 2-cent reduction in the price of milk sold thru stores, if widely advertised, would doubtless have been reflected in a markedly increased volume of sales, for it would have opened up a better market among families with low incomes (who are in general the same families that lack refrigeration and who would therefore be interested in utilizing store facilities by buying milk closer to the time of its use), and it would have encouraged families with medium-sized incomes to increase their daily purchases of milk.

Enlargement of Educational Program

The second recommendation for promoting sales of milk in the St. Louis sales area—that of an enlarged educational program—may be divided into two parts: an intensive current program, and a long-time program.

The current program should include the placing of educational material before St. Louis consumers in such a way as to popularize the use of milk in locations where the greatest increases in consumption can be obtained at the lowest cost. The types of displays or presentations will vary with different localities, and in their initial stages will necessarily be experimental. Consequently results from this type of program should be measured frequently.

¹As calculated from the monthly fluid-milk reports of the Bureau of Agricultural Economics, U. S. Department of Agriculture.

The long-time program should incorporate the plans at present sponsored by the Dairy Commission of St. Louis (formerly Dairy Council). This program has already been established on a working basis and could well be expanded to cover the entire St. Louis sales area.

Improved business conditions, in themselves, can hardly be depended upon to increase milk consumption in the St. Louis area, for even in the fairly prosperous year of 1930 more than two-thirds of the families in this area had average incomes of only \$117 a month. The need obviously is to establish prices for milk that will bring this commodity within the reach of the mass of consumers, who have and probably will continue to have low incomes.

Districts Most Favorable for Store Sales

Successful distribution of milk thru stores is dependent usually upon the following factors:

1. A high concentration of people within a restricted area.
2. Average family incomes higher than the subsistence level but lower than the luxury level.
3. A population of nationality or racial origin accustomed to a fairly extensive use of milk.

Assuming that store sales are to be encouraged in St. Louis, the next question is in what districts attempts to increase such sales would probably prove most successful.

Other things being equal, promotion of store sales is likely to be most successful in areas having a population of 20,000 or more people per square mile. The first thirteen districts shown in Fig. 17 meet this requirement: Nos. 6, 10, 11, 12, 16, 17, 19-24, and 26.

Of the above districts, Nos. 20, 21, 22, 23, and 26 would be excluded from consideration because of the large number of families with incomes below the subsistence level (Fig. 6, page 100). In these districts the average income was less than \$1,500 a year; which means that the majority of the families had incomes much lower than \$1,500. District 11 would be excluded because of the high proportion of Negroes, who have been shown by several studies to consume less milk than whites even when on the same income-level. Districts 18, 21, 22, and 25 would also be excluded for the same reason were they not already excluded because of low incomes or low population density, all these districts having less than 80 percent white population.

This leaves Districts 6, 10, 12, 16, 17, 19, and 24 as those in which

store sales of milk could, theoretically at least, be most successfully promoted. Among these districts the one having the largest number of families in the middle-income group is No. 6, followed by 10, 16, 17, 24, 19, and 12 in the order named. This item is of interest since it is

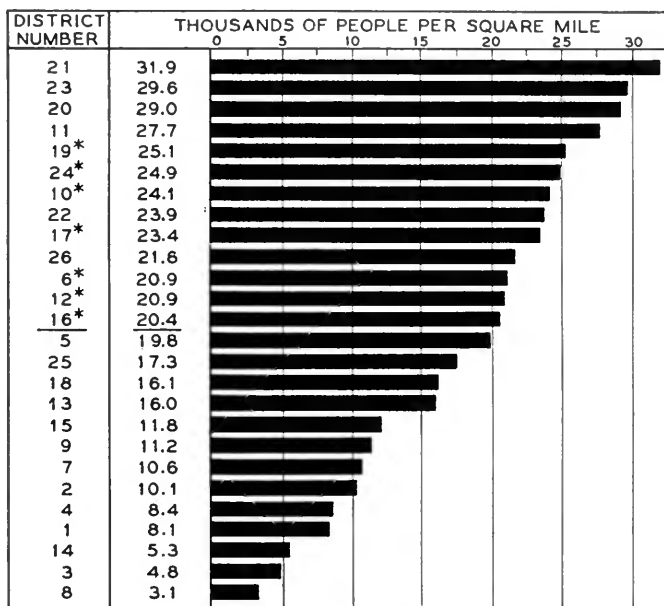


FIG. 17.—DENSITY OF POPULATION IN THE VARIOUS ST. LOUIS CENSUS DISTRICTS, 1930

A relatively dense population is needed for the successful promotion of retail milk sales thru stores. The first 13 districts shown above have more than 20,000 people per square mile. Six of these districts would be excluded from consideration, however, either because of low incomes or because of the high proportion of Negroes, who are not so favorable to the use of milk as whites. The seven districts that are starred are the ones most susceptible to increased milk consumption thru store sales.

among the families in this income-range that the greatest interest seems to be shown in increasing milk consumption and in effecting savings by purchasing milk thru stores.

From another point of view also these districts appear to be favorable territories for the expansion of store sales of milk. There are few relief cases here in comparison with the average for the city (Fig. 18). In May, 1934, only 6 percent of the families in these districts were on relief, whereas in St. Louis as a whole 16 percent were on relief. This

is another indication that the majority of the families in these districts have incomes above the subsistence level.

In certain parts of the 19 districts not listed above, it is likely that concentrated efforts to increase milk consumption thru store sales would be as effective as in the selected districts. If special efforts are made in selected areas to promote sales of milk, the results should be

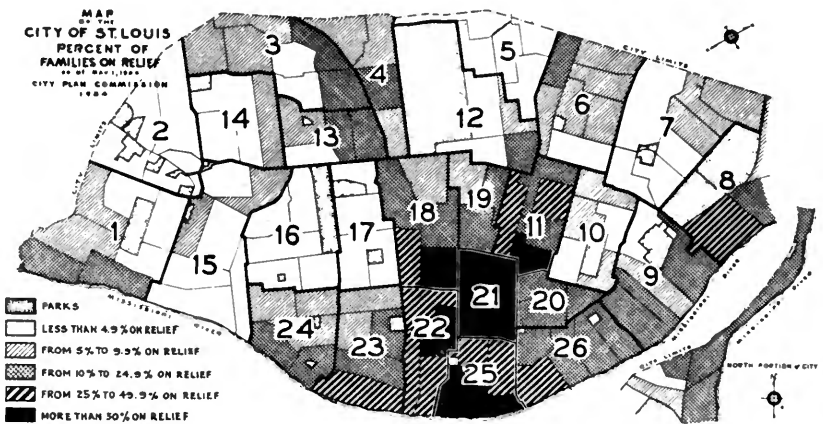


FIG. 18.—MAP OF THE CITY OF ST. LOUIS SHOWING PROPORTION OF FAMILIES ON RELIEF IN THE VARIOUS CENSUS DISTRICTS, MAY, 1934

In general the districts having the greatest density of population (Fig. 17) and the lowest average annual income (Fig. 6) had the greatest proportion of families on relief. In May, 1934, 75 percent of the families in District 21 were receiving public help. The average number of families on relief in all districts was 16.1 percent.

carefully measured, and if successful, similar measures used to increase sales in other districts.

Companies having stores scattered thruout the city may find it worth while to handle milk at all their stores, regardless of district, when little or no extra equipment is necessary for so doing. This is especially true when newspaper advertising is used for increasing milk consumption. Tho only a small volume may be handled in some stores in the less densely populated areas, the margin of profit should be sufficient to bear its proportionate part of the advertising cost and thereby reduce the company's unit cost for this purpose. The decision as to which stores can handle milk profitably must of course be made by the management of each store or company; it was for the purpose of presenting the possibilities more clearly and of facilitating such decisions that this survey was made.

WHY PRICES TO PRODUCERS DECLINED FROM 1929 TO 1933

Dairymen in the St. Louis dairy district experienced rapidly declining milk prices from 1929 to the early part of 1933. Many of these dairymen have asked why this decline occurred. Primarily it was a part of the general decline in price-levels (including the price of farm feeds) and in consumers' incomes. A secondary factor was the greater volume of milk that resulted from an increase in the number of dairy cows in this area and in the country at large.

Downward Trend of General Price-Level

The close correlation between changes in the general price-level, the wholesale prices of farm foods, and the St. Louis fluid-milk prices during recent years is shown graphically in Figs. 19 and 20.

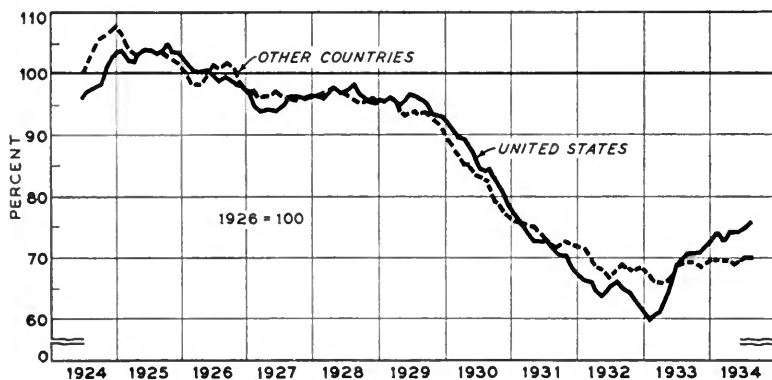


FIG. 19.—CHANGES IN WHOLESALE PRICES OF ALL COMMODITIES IN THE UNITED STATES AND IN OTHER COUNTRIES, 1924 TO 1934

The decline in the general price-level in 1929-1933 was world wide. Since early in 1933 the general price trend has been upward. It is reasonable to expect a continuation of this general upward movement in the United States until the forces of recovery now in operation have worked out their influence.

The rapid decline in the general price-level from 1929 to 1933 brought the price average of 784 commodities in the United States in February, 1933, to less than two-thirds of the 1929 average. This decline was world-wide, conditions in the United States corresponding very closely to those in England, Canada, Germany, France, Italy, Netherlands, Japan, and China—countries that take about 75 percent of the agricultural exports from the United States.

Food prices, as is always true, tended to follow closely the changes in the general price-level. And St. Louis fluid-milk prices to producers followed closely the prices of farm foods in general, altho remaining most of the time at a little higher level. It is always true that food prices tend to change as a group, tho prices of particular foods frequently do not change at the same rate as the group.

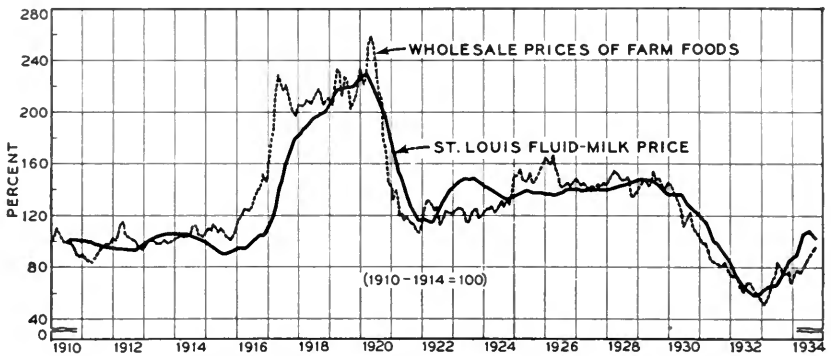


FIG. 20.—INDEX OF PRICES OF FARM FOODS IN THE UNITED STATES, AND A TWELVE-MONTHS' MOVING AVERAGE OF ST. LOUIS FLUID-MILK WHOLESALE PRICES, 1910 TO 1934

When the general price-level declines or rises, food prices tend to follow these changes closely. Also, prices of different foods tend to change at the same time tho frequently they do not change at the same rate. A close correspondence between prices of farm foods in the United States and St. Louis fluid-milk prices is shown in this chart.

The outlook now seems to be for a general upward movement of prices in the United States during the next few years. The general level has risen considerably since the low point in July, 1932, having (in December, 1934) advanced 29 percent since that time. St. Louis milk prices were 89 percent higher in December, 1934, than in December, 1932, and they have advanced considerably faster than prices of farm foods in general, tho in the late summer and fall months of 1934 milk prices were only slightly higher than those for farm foods in general.

Lower Prices for Feeds

Cheap feeds encourage heavy milk production. When feed is cheap in relation to milk, farmers feed their cows more liberally and they feed more cows if they can buy them at reasonable prices. Both these practices tend to produce an oversupply of milk, and consequently milk prices decline. When milk prices become too low in relation to feed

prices, farmers feed less grain, production drops, and prices after a time rise.

In the St. Louis dairy district during the ten years 1925 to 1934, 100 pounds of milk would purchase an average of 158 pounds of a standard dairy ration (Fig. 21). In 1932, when feed was exceedingly cheap, 100 pounds of milk would buy 198 pounds of the ration. As a result of advancing feed prices, 100 pounds of milk in 1934 would

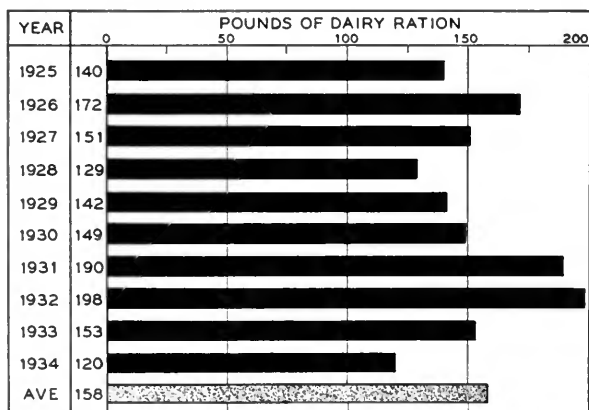


FIG. 21.—AMOUNT OF A ST. LOUIS DAIRY RATION THAT 100 POUNDS OF MILK IN THE ST. LOUIS MILKSHED WOULD BUY YEARLY, 1925-1934

In 1932, when feed was cheap, 100 pounds of milk in the St. Louis milkshed would buy 198 pounds of the dairy ration. In 1934 this amount of milk would buy only 120 pounds of the ration, or about four-fifths as much as for the above ten-year average. Low-priced feeds encourage heavy milk production, whereas high-priced feeds discourage it.

buy only 120 pounds of this ration, or about four-fifths as much as during the ten-year average. Monthly variations in the feed-purchasing power of milk during 1925-1934 are shown in Fig. 22. It will be noted that in September, 1934, 100 pounds of milk would buy only 111 pounds of the dairy ration or less than three-fourths of the ten-year average amount. The high hay and feed prices during the present winter (1934-35) are the result of the very low production of hay and feeds during the summer of 1934. These higher feed prices can be expected to result in a lower production of milk in the early part of 1935.

Changes in the farm prices of several products important in the St. Louis dairy district are shown in Table 8.

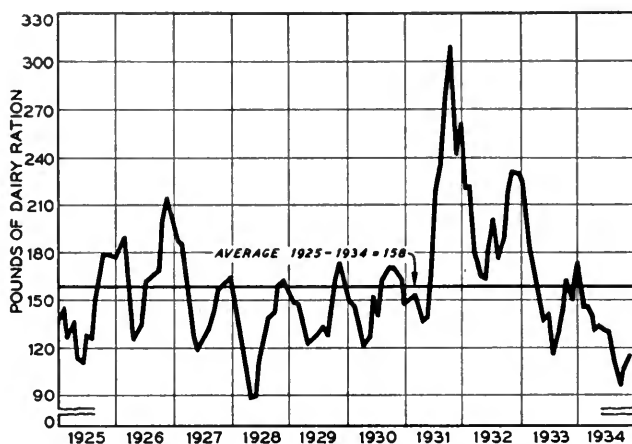


FIG. 22.—AMOUNT OF A ST. LOUIS DAIRY RATION THAT 100 POUNDS OF MILK WOULD BUY MONTHLY IN THE ST. LOUIS MILKSHED, 1925-1934

Milk prices have risen much more slowly during the past three years than have feed prices, with the result that the feed-purchasing power of milk has sharply declined. In the latter part of 1934, 100 pounds of milk would buy less feed than at any time since 1928.

TABLE 8.—FARM PRICES FOR SELECTED FARM PRODUCTS IN THE ILLINOIS PART OF THE ST. LOUIS MILKSHED AND FOR A STANDARD DAIRY RATION

Commodity	Average 1925-1929	Average in July, August, September		
		1932	1934	Percent change
Livestock and poultry products				
Milk (cwt.).....	\$1.95	\$.88	\$1.41	+60.2
Butterfat (lb.).....	.395	.157	.22	+40.1
Eggs (doz.).....	.265	.123	.15	+22.0
Chickens (lb.).....	.216	.103	.113	+ 9.7
Livestock				
Milk cows (head).....	77.04	33.68	31.10	- 7.7
Beef cattle (cwt.).....	8.56	5.22	4.87	- 6.7
Hogs (cwt.).....	11.34	4.27	5.06	+18.5
Veal calves (cwt.).....	11.87	5.31	4.89	- 7.9
Grains				
Wheat (bu.).....	1.30	.40	.89	+122.5
Corn (bu.).....	.91	.22	.67	+204.5
Oats (bu.).....	.42	.14	.44	+214.3
Soybeans (bu.).....	2.15	.39	1.14	+192.3
Dairy ration (cwt.).....	1.44	.47	1.20	+155.3
Alfalfa hay (ton).....	16.64	7.40	15.80	+113.5

Decline in Consumers' Incomes

About 50 percent of the milk sold by producers in the St. Louis milkshed is manufactured into butter or is utilized in products sold on a butter-value basis; hence their market value is directly propor-

tional to the worth of the butter. Since the worth of this milk in turn influences the price of fluid milk¹ sold in whole form to retail consumers, circumstances that influence the price of butter influence indirectly the price of whole milk.

This relation between butter prices and whole-milk prices is of interest at this point because data are available showing the course of factory payrolls (a good index of consumer incomes) and butter prices over the past few years (Fig. 23). The similar up-and-down

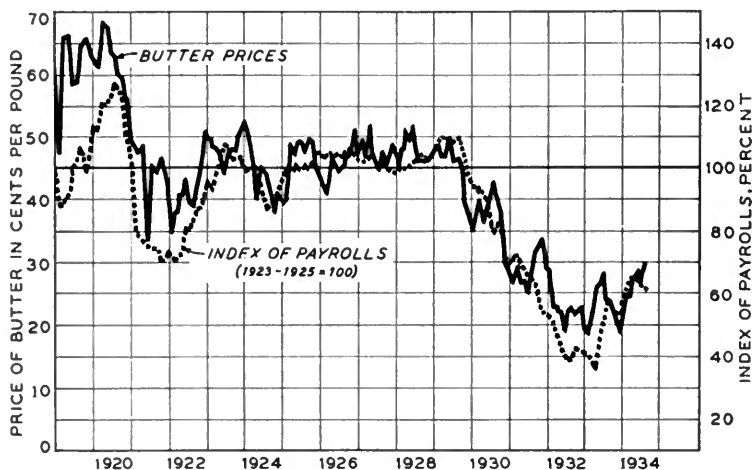


FIG. 23.—CHANGES IN PRICE OF 92-SCORE BUTTER IN CHICAGO, AND IN CONSUMERS' INCOMES IN THE UNITED STATES AS MEASURED BY FACTORY PAYROLLS, 1919 TO 1934

Changes in consumers' incomes have had a strong influence on butter prices, as shown by the similar up-and-down swings of these items from 1919 to 1934. It is reasonable to expect that both factory payrolls and butter prices will move upward thru the next few years.

swings in factory payrolls and butter prices in the United States since 1919 indicate the strong influence that changes in the incomes of consumers have had on butter prices. Both the moderate decrease in payrolls in 1927, resulting from the business recession, and the severe decline in payrolls during the depression of 1929-1933 were accompanied by declining butter prices. The substantial increase in consumer incomes during the eighteen months preceding September, 1934, as measured by factory payrolls, has been accompanied by a corresponding increase in butter prices.

¹Class I milk; see definitions on page 146.

It may be added that the general movement of both factory payrolls and butter prices is likely to continue upward during the next few years—a prospect that is of vital importance to milk producers in the St. Louis milkshed. This long-time upward swing should not be confused with temporary up-and-down fluctuations.

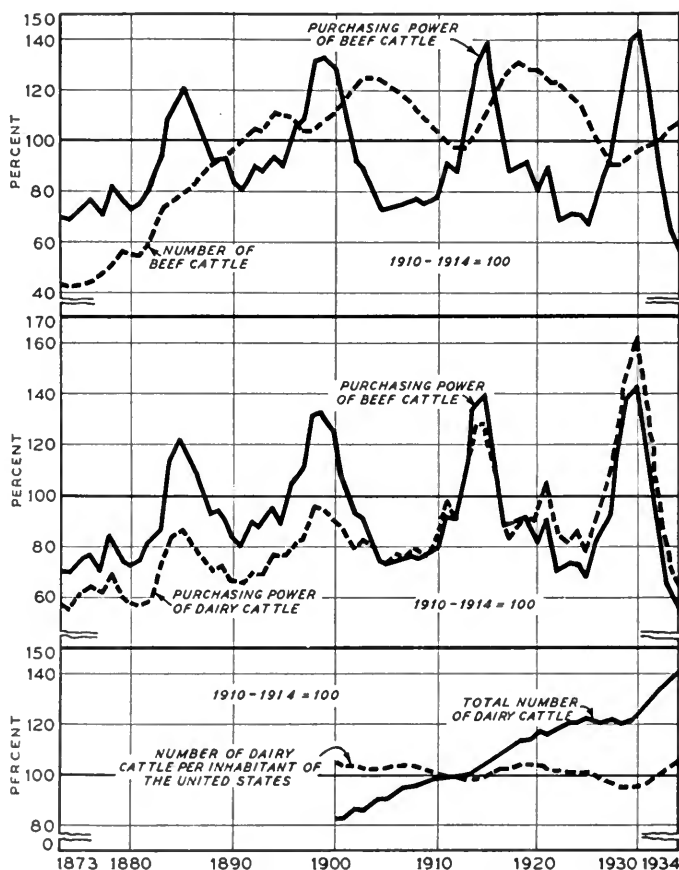


FIG. 24.—CHANGES IN CATTLE PRICES AS INFLUENCED BY CHANGES IN NUMBER OF CATTLE IN THE UNITED STATES, 1873 TO 1934

Cattle prices are characterized by well-defined cycles in which peaks usually occur every fourteen to sixteen years. The above chart shows these peaks occurring in 1885, 1899, 1915, and 1930. When numbers of cattle are high, total milk production is high and the purchasing power of cattle low. If history repeats itself, an upward movement in cattle prices may be expected during the next few years as the result of a decline in the number of cattle and in milk production.

Increase in Number of Cattle

Cattle numbers and prices are characterized by well-defined cycles whose peaks usually come fourteen to sixteen years apart (Fig. 24). When numbers of cattle are high, prices of cattle are relatively low, and these low prices induce dairymen to acquire more cows for milk production. Thus a larger volume of milk becomes available for the market, which in turn depresses the price of milk, and producers begin to dispose of their less efficient cows.

An increase in the number of cattle, and consequently in the production of milk, is one of the economic forces that would have caused relatively lower butter and milk prices from 1931 to 1934 even had there been no general price decline. In January, 1934, the price of cattle compared with the price of other items reached its lowest point in nearly half a century.

Faced with an acute feed shortage in 1934, producers began to liquidate their milk cows in the summer and early fall. This movement is likely to continue; and if history repeats itself, an upward movement in cattle prices, accompanied by a decreasing volume of milk and increasing milk prices, may be expected during the next few years.

While the above remarks apply to the situation in the United States as a whole, the situation in the St. Louis milkshed is somewhat different. The number of heifers that will come into milking in the St. Louis milkshed during the next two years is materially larger proportionately than in the country as a whole, or for Illinois as a whole (Table 9); and for this reason an abundance of milk is in prospect

TABLE 9.—DAIRY CATTLE POPULATION AND PRODUCTION OF MILK IN THE ST. LOUIS MILKSHED, IN ILLINOIS, AND IN THE UNITED STATES, 1934

	St. Louis milkshed ^a	Illinois ^b	United States ^b
Milk sold daily per cow milked, pounds.....	15.3 ^c	.....	.....
Milk sold annually per cow, pounds.....	4 161 ^d	.....	.....
Number of animals per 10 farms			
Milk cows.....	73	.....	.....
Dry cows.....	17	.....	.....
Total cows.....	90	.....	.....
Two-year old heifers.....	10	.....	.....
Yearling heifers.....	13	.....	.....
Heifer calves to be raised.....	12	.....	.....
Total heifers.....	35	.....	.....
Proportion of yearling and two-year old heifers to total number of cows.....	25.8%	17.9%	18.2%

^aInformation furnished by 5,409 producers in the St. Louis milkshed in June, 1934. Table 32, Appendix, gives data by counties. The questionnaire used for obtaining these statistics is shown on page 182, Appendix. ^bBased on data included in Table 33, Appendix. ^cMay, 1934. ^dFrom June, 1933, to May, 1934, all cows.

in this area during this period. Relatively high milk production, combined with higher butterfat prices, which will be reflected in higher prices for whole milk, should cause substantial increases in the incomes of dairymen in the St. Louis milkshed during the next few years.

Whole-Milk Prices Affected by Condensery Prices

During the past twenty-five years changes in the average net prices received by producers in the 41- to 50-mile zone from St. Louis and selling to the whole-milk market have corresponded closely to changes in condensery prices at Greenville during the same period (Fig. 25).

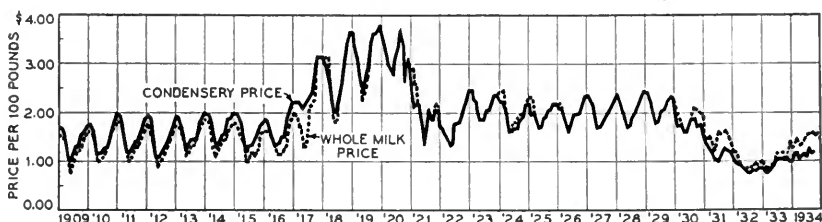


FIG. 25.—PRICES FOR WHOLE MILK AT ST. LOUIS COUNTRY PLANTS AND CONDENSERY PRICES AT GREENVILLE, ILLINOIS, 1909 TO 1934

Changes in whole-milk prices paid to producers in the St. Louis milkshed have corresponded closely to changes in condensery prices in this area. From 1930 to 1934 whole-milk prices were somewhat higher than condensery prices. Because of a probable upward movement in consumers' incomes and a lowered milk production, as the result of fewer cows, milk prices to St. Louis producers may be expected to move upward during the next few years.

Furthermore these changes in condensery and whole-milk prices have corresponded closely to changes in the general price-level during the past fifteen years (Fig. 19, page 117).

Judging from relationships existing in the past, producers in the country-plant areas of the St. Louis milkshed may expect to receive for whole milk an average price higher than the condensery price by about the amount that the unit cost of producing milk of the higher quality demanded for fluid sales in even quantities thruout the year, exceeds the costs of producing milk for condensery uses. With the enactment of more stringent quality requirements for whole milk, and the resulting increase in the cost of producing it, it is probable that whole-milk prices in the St. Louis milkshed will continue to exceed materially the condensery prices.

THE BASIC-SURPLUS PRICE PLAN

During the past few years what is known as the "basic-surplus" price plan for paying producers for milk has spread rapidly within the United States. This plan was adopted by the organized producers in the St. Louis milkshed in October, 1930, and was continued until November 15, 1934, with the exception of five months in 1933, when a flat-price plan was in effect. During the last year in which the basic-surplus plan was in effect—November 25, 1933, to November 15, 1934—it was applied to all producers in the milkshed. The plan was abandoned because organized producers, by a two-to-one vote indicated their preference for a weighted average price for milk (see page 147).

Under the basic-surplus plan differences between the average market value of milk marketed as whole milk (or "basic" milk) and of milk marketed as cream or manufactured products ("surplus" milk) are recognized in determining payments to producers for their milk. In other words, this plan distributes to producers the proceeds from the sale of milk at two or more prices, according to the potential market value of the milk contributed by each producer.

Advantages in Open-Market Policy Under Plan

The basic-surplus plan may operate under either an open-market policy or a closed-market policy. Under an open-market policy there is no artificial restriction to the quantity of whole milk that each producer shall be permitted to market during any given year, nor as to how many producers may sell whole milk to a given market.

In contrast to the open-market policy, the closed-market policy restricts the volume of milk for which any producer may receive the base, or Class I, price to the volume which he produced in some previous period, or to some practical increase resulting from an increase in sales of milk.

From an economic standpoint the use of a closed base is both unsound and unwise, because, in the first place, it tends to penalize the more efficient to the benefit of the less efficient dairyman, particularly if it be extended over a period of years; and, second, because it is in essence a producer monopoly which is almost certain to be broken down eventually by outside milk coming into the market and disrupting the outlets of those trying to secure a privileged position.

The open-market policy was used in the operation of the basic-surplus plan in the St. Louis milkshed. Under it the volume of basic milk that each producer was entitled to market was subject to change

each year, and new producers, after a short probationary period, were able to sell milk to the market on a parity with the older producers.

Different Kinds of Milk Surpluses

In discussing "surplus" milk—the amount of milk produced for market over and above that consumed as whole milk—it is well to remember that such milk may be divided into three distinct categories: *seasonal surplus*, *marginal surplus*, and *constant surplus* (Fig. 26).

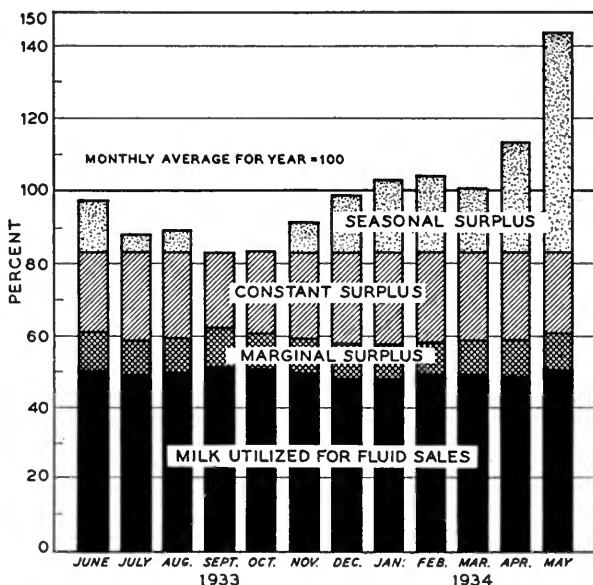


FIG. 26.—VOLUME OF WHOLE-MILK SALES MONTHLY IN THE ST. LOUIS DAIRY DISTRICT, 1933-1934, AND VOLUME OF DIFFERENT SURPLUSES

Milk surpluses may be thought of as three distinct kinds: (1) *seasonal*, that is, the amount by which, during given seasons, production exceeds that of the lowest season; (2) *marginal*, that is, the amount necessary to insure against daily variations in production and consumption; and (3) *constant*, that is, the difference between the seasonal surplus and the marginal surplus, a rather constant amount that would be available for fluid sales were there a demand for it.

The *seasonal surplus* is the volume of milk produced in some months in excess of that produced in the lowest month of the year. This surplus must necessarily be utilized as cream for buttermaking or converted into other milk products. The *marginal surplus* is that volume in excess of the *average* daily consumption of whole milk that

must be on hand to protect distributors against the wide variation that occurs in day-to-day consumption and production. Distributors carry about 20 percent in excess of their average daily sales of whole milk in order to meet this contingency. The third type of surplus, the *constant* surplus, is the amount of milk in excess of both the daily demand and the marginal surplus that is available every month of the year. The fact that there is such a surplus would make it possible to increase immediately the consumption of whole milk in the St. Louis sales area without drawing upon producers outside the present producing area. A still larger increase would be possible, without recourse to milk from outside the present area, if producers would so alter their production practices as gradually to redistribute some of the large surpluses now occurring in April, May, and June, to July, August, September, and October, the months of low production. For seasonal variations among two groups of producers, see Fig. 27.

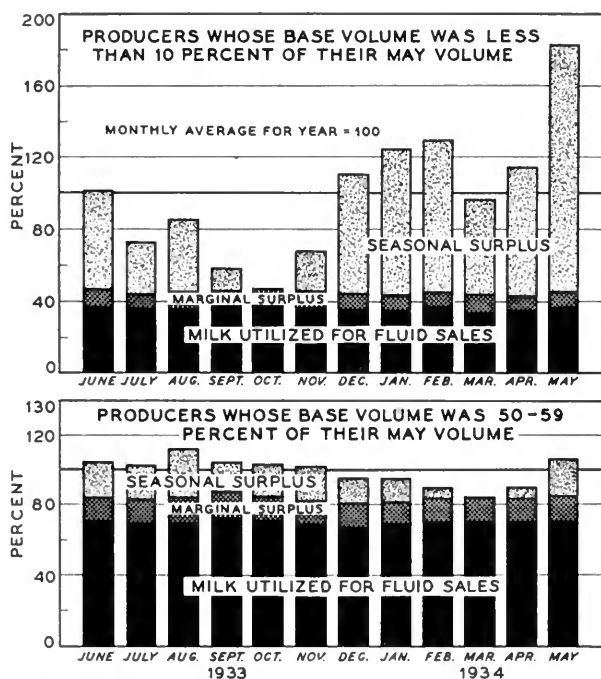


FIG. 27.—MONTHLY VARIATION IN PRODUCTION OF FARMERS WHOSE BASE VOLUMES WERE DIFFERENT PROPORTIONS OF THEIR MAY VOLUMES: JUNE, 1933, TO MAY, 1934

The seasonal surplus of certain groups of producers is very small compared with other groups of producers.

Production More Even Under Basic-Surplus Plan

The influence of the basic-surplus plan in encouraging dairymen to produce more even volumes of milk thruout the different months of the year has been demonstrated in the St. Louis milkshed.

As already stated, part of the producers in this area were paid on the basic-surplus plan from October, 1930, to June, 1933. The seasonal variation of these producers in 1932, when the basic-surplus plan had been in operation more than a year, is shown by the heavy solid line in Fig. 28. Contrasting with this heavy line is a broken line showing

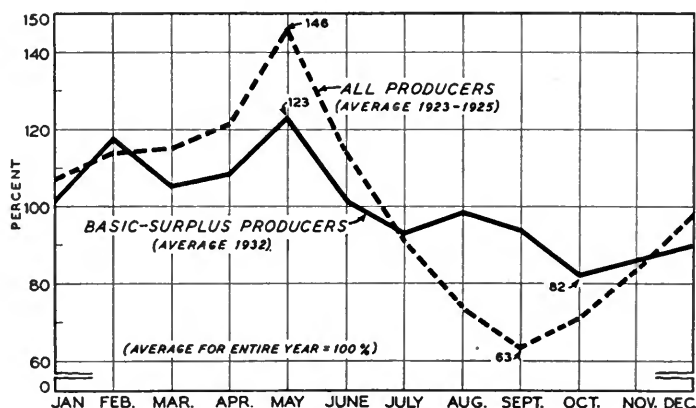


FIG. 28.—MONTHLY PRODUCTION IN 1932 OF PRODUCERS PAID ON THE BASIC-SURPLUS PLAN, COMPARED WITH THAT OF ALL PRODUCERS IN THE ST. LOUIS MILKSHED FROM 1922 TO 1925

The range in seasonal production of those dairymen in the St. Louis milkshed who in 1932 had been paid on the basic-surplus plan for over a year was less than half that of all producers in this milkshed from 1922 to 1925. In other words, the basic-surplus plan tended to encourage more even production.

the seasonal variation in the production of all dairymen in the St. Louis milkshed during an earlier period (1922-1925) when the flat-price system was in operation. A very marked change toward a more even production of milk during the different months of the year is evident under the basic-surplus plan.

One reason for striving toward a more even production of milk for the fluid market is that the demand for fluid milk is relatively even thruout the year. Thus during the twelve months from June, 1933, thru May, 1934, sales of fluid milk in the St. Louis area were about the same every month (Fig. 29). In September, the high sales month, they were only 7 percent higher than in January, the low month.

Production of milk, on the other hand was 73 percent higher in May, the high production month, than in September, the low month. Thus production varied about ten times as greatly from month to month as did the consumption of milk. Such wide differences between consumption and production are costly for all concerned in the fluid-milk business.

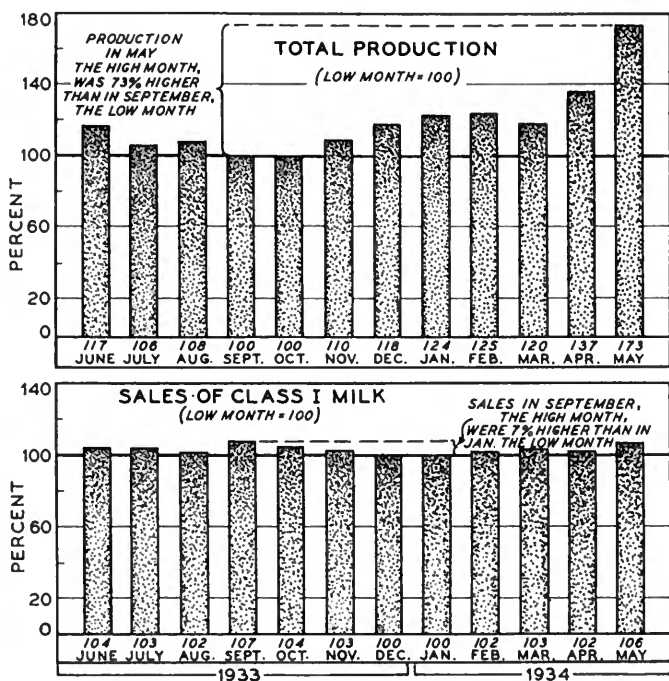


FIG. 29.—MONTHLY VARIATIONS IN TOTAL MILK PRODUCTION AND IN TOTAL SALES OF CLASS I MILK IN THE ST. LOUIS DAIRY DISTRICT, 1933-34

The total production of milk in May, the high month, was 73 percent greater than in September, the low month. On the other hand, the sales of Class I milk in September, the high month, were only 7 percent greater than in January, the low month. Thus the seasonal fluctuation in production was more than ten times as great as the seasonal fluctuation in the volume of Class I milk sales.

It is interesting to note that the wide seasonal variation in production just mentioned was caused, in large part, by dairymen who were on the market nine months or less during this period (Fig. 30). The majority of these "in-and-outers," having received a flat price for their milk previous to November 25, 1934, had no particular in-

centive for making any adjustments in the volume of milk they produced in the different months.

More rigid enforcement of quality requirements in the St. Louis milkshed should reduce greatly the number of the so-called "in-and-outers," since it becomes unprofitable for a farmer who buys the necessary equipment to enable him to remain on the whole-milk market to ship milk to a condensery or other alternative market, where he gets a lower price for his milk.

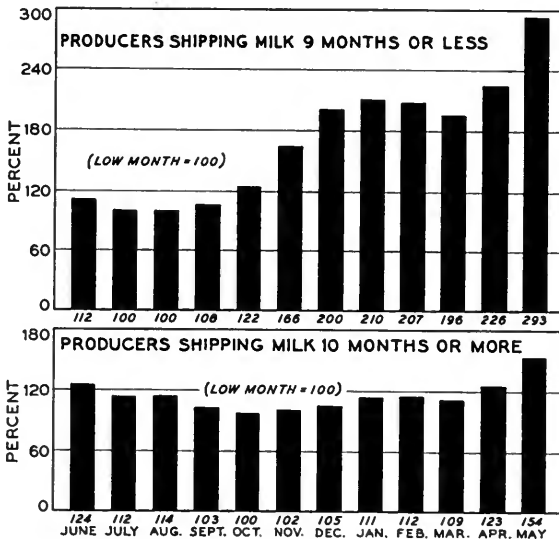


FIG. 30.—MONTHLY VARIATION IN THE PRODUCTION OF TWO GROUPS OF DAIRYMEN IN THE ST. LOUIS MILKSHED, JUNE, 1933, TO MAY, 1934

Dairymen who shipped milk nine months or less had a seasonal variation in production that was nearly four times as large as that of producers who shipped milk ten months or more.

The restoration of the basic-surplus plan, which tends to discourage wide seasonal variation in production, coupled with strictly enforced quality requirements, which will keep the sporadic producers out of the whole-milk market, should, the author believes, reduce greatly seasonal fluctuations in production in this market and thereby permit it to operate on a more efficient basis.

Basic-Surplus Plan Not Cause of Price Decline

The rapid decline in producer milk prices which took place from 1929 to 1933 caused much dissatisfaction among dairymen in the St.

Louis milkshed. Many individuals in the area attributed the decline to the basic-surplus plan of paying for milk which, as stated above, was adopted in October, 1930.

Actually, however, the basic-surplus plan had nothing to do with this price decline. Producers in the Minneapolis-St. Paul, New York, and other milksheds, who received a weighted average price during this period, were likewise dissatisfied with milk prices. The real cause for declining prices in the various milksheds of the country from 1929 to 1933 is not to be found in any particular type of plan for paying producers but may be traced to deep-seated economic disturbances, as already pointed out on pages 117 to 124.

Since the use of this plan tends to effect economies in transportation and plant operation in addition to giving a higher average price to dairymen whose production of milk is more nearly in line with consumers' demands, it is not unlikely that sooner or later it will again be adopted in the St. Louis milkshed. In the meantime it would seem a wise policy for producers in this milkshed to continue to so adjust their feeding and breeding practices as to bring about a more even production of milk thruout the year.

DISTRIBUTORS' GROSS HANDLING MARGINS

A distributor's gross handling margin for a given unit of milk is the difference between the price that he pays producers for it and the price he receives for it.

Producers and consumers frequently assume that the gross handling margin realized by distributors is the difference between the retail quart price of delivered milk and the wholesale price paid to producers for milk. The fact is that sales in quarts at retail constitute only a small proportion of the milk purchased from producers. For instance, in July, 1934, only 23.7 percent, or about one quart of every four purchased by distributors in the St. Louis sales area, was sold in quart bottles to retail consumers. The sale prices of the other three-fourths of the milk which distributors handle must of course be taken into account when one is considering their gross handling margins.

Proportions of Milk Utilized in Different Forms

For the twelve months from June, 1933, to May, 1934, approximately half the milk purchased by distributors in the St. Louis dairy district was utilized as whole milk (Class I). These proportions held also for July, 1934 (Table 10).

TABLE 10.—UTILIZATION OF MILK PURCHASED BY DISTRIBUTORS IN THE ST. LOUIS DAIRY DISTRICT, JULY, 1934

Class	Amount	Percentage
	<i>lbs.</i>	
Class I.....	18 285 155	50.7
Class II.....	3 603 342	10.0
Class III.....	14 168 155	39.3
Total.....	36 056 652	100.0

The half used otherwise than as whole milk was used as Class II milk, which constituted 10 percent of distributors' total purchases, and Class III milk, which made up 40 percent of distributors' purchases. Milk known as Class II and Class III is that used as table cream, condensed milk, or butter, or converted into other milk products (see pages 146 and 147 for further definition of classes).

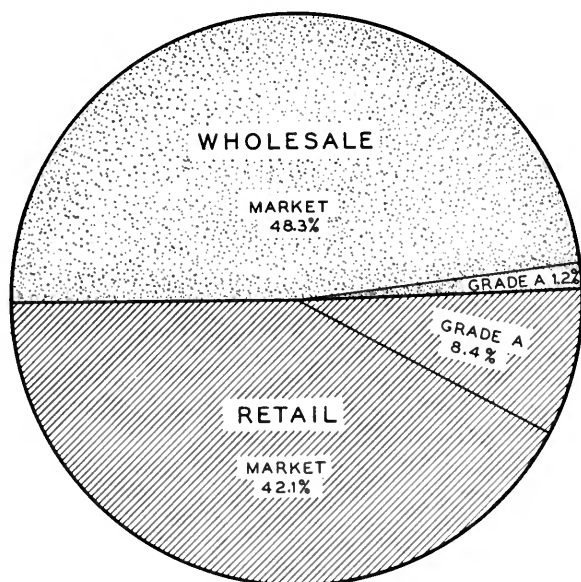


FIG. 31.—PROPORTIONS OF CLASS I MILK SOLD THRU RETAIL AND WHOLESALE OUTLETS IN THE ST. LOUIS SALES AREA, JULY, 1934

More than half the total volume of Class I milk sold in the St. Louis area in July, 1934, was sold direct to retail consumers; the other half was sold at wholesale prices to restaurants, stores, hotels, and other institutions.

Retail and Wholesale Sales of Class I Milk

Of the total volume of Class I sales of milk in the St. Louis area in July, 1934, retail and wholesale sales comprized practically equivalent proportions—50.5 percent and 49.5 percent respectively (Fig 31). The total amount of Grade A milk, sold at retail and wholesale, constituted 9.6 percent of the total volume of Class I sales.

By far the larger part of the volume of Class I sales consisted of retail and wholesale quarts (retail quarts, 47.4 percent and wholesale quarts, 28.0 percent (Fig. 32 and Table 11). The volume of Class I

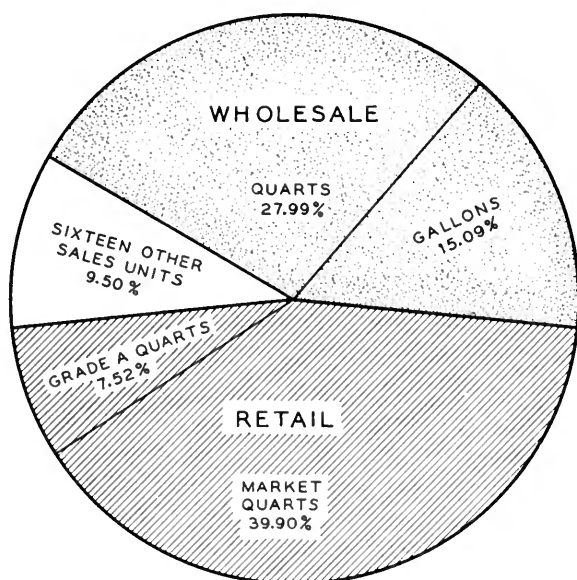


FIG. 32.—PROPORTIONS OF CLASS I MILK SOLD IN THE PRINCIPAL SALES UNITS, ST. LOUIS SALES AREA, JULY, 1934

Retail quarts of milk (including Grade A) constituted slightly less than half the total sales of Class I milk in the St. Louis sales area in July, 1934; wholesale quarts, about three-tenths; and wholesale gallons, about one-seventh. Together, these items equaled about nine-tenths of the total sales of Class I milk.

milk sold in these units, together with that sold in bulk gallons wholesale, comprized 90 percent of the total Class I sales. The remaining 10 percent was divided among fifteen other sales units.

Gross Handling Margins on Class I Milk

Since distributors in the St. Louis sales area sell Class I milk in twenty different sales units (Table 11), they have twenty different gross handling margins. The margin for retail quarts in July, 1934, was 6.47 cents; for wholesale quarts, 3.47 cents; and for wholesale bulk gallons, 2.47 cents a quart (and less when wholesale bulk milk

TABLE 11.—PROPORTIONS OF CLASS I MILK SOLD IN THE DIFFERENT SALES UNITS, AND DISTRIBUTORS' GROSS HANDLING MARGINS ON EACH UNIT, ST. LOUIS MILK SALES AREA, JULY, 1934

Sales units	Percent of total Class I milk sales	Distributors' gross margin on quart basis
		<i>cents</i>
Retail quarts.....	39.90	6.47
Wholesale quarts.....	27.99	3.47
Wholesale bulk gallons.....	15.09	2.47
Retail Grade A quarts.....	7.52	8.61
Wholesale pints.....	2.93	7.47
Retail pints.....	2.22	9.47
Wholesale ½ pints.....	1.83	9.47
Wholesale Grade A quarts.....	.80	6.61
Retail Grade A, Vitamin D, quarts.....	.53	9.18
Wholesale ¼ quarts.....	.47	8.97
Retail Grade A pints.....	.26	12.61
Wholesale Grade A ½ pints.....	.22	14.61
Wholesale Grade A ⅓ quarts.....	.11	12.61
Retail Grade A ½ pints.....	.03	18.61
Wholesale Grade A pints.....	.03	10.61
Retail ½ pints.....	.02	15.47
Wholesale Grade A Vitamin D quarts.....	.02	7.18
Retail Grade A Vitamin D pints.....	.01	14.18
Wholesale Grade A Vitamin D pints.....	.01	12.18
Wholesale Grade A Vitamin D ½ pints.....	.01	18.18
Total.....	100.00	.....
Weighted average gross handling margin.....	.....	5.41

TABLE 12.—DISTRIBUTORS' AVERAGE GROSS MARGIN FOR HANDLING WHOLESALE QUARTS OF MILK, BOSTON AND ST. LOUIS, 1934^a

City	Distributors' average sale price for wholesale quarts	Average price paid producers ^b	Distributors' gross handling margin
St. Louis.....	8.9	4.5	4.4
Boston.....	9.0	6.6	2.4
Difference.....	...	...	2.0

^aBased on monthly fluid-milk reports of the Bureau of Agricultural Economics, U. S. Department of Agriculture.

^bMilk prices to producers are quoted on the basis of 3.5-percent butterfat content. Since milk sold by distributors to stores or consumers contained more than 3.5 percent butterfat, the average prices paid to producers were herein corrected to include the value of the additional butterfat contained in the milk when sold.

was contracted at figures lower than quoted prices). The weighted average gross handling margins for the 20 retail units were 5.41 cents a quart, which is 1.06 cents a quart less than the margin on retail quarts.

The average gross handling margin of distributors in the St. Louis area on wholesale quarts for the year 1934 is shown in Table 12 in comparison with the margin on which distributors in the Boston area operated. The St. Louis margin was 4.4 cents, the Boston average 2.4 cents a wholesale quart.

ST. LOUIS MILK MARKET ORGANIZATIONS: AIMS AND ACCOMPLISHMENTS

The forces that determine how and in what volume milk shall be produced and what the marketing service shall be are not self-operative; they are influenced by the activities of all the groups concerned—producers, distributors, and consumers.

For the twenty years preceding 1929 the major policies followed in the production and marketing of milk in the St. Louis dairy district were determined by milk distributors. Consumers had no organized representation. Producers made several attempts to unify their interests but in each instance the organization was short-lived.

Finally in 1929 an organization known as the Sanitary Milk Producers was effected among producers in the St. Louis milkshed in order to bargain collectively with distributors. In 1930 a consumer organization, the Consumers' Milk Commission, was established to represent consumer interests. The activities of this commission were taken over in 1934 by the St. Louis Consumers' Council. With the advent of these producer and consumer organizations, the control of the major policies in the St. Louis dairy district has become more nearly representative of all interests concerned.

At the present time milk policies in St. Louis are, in a measure, specified in the provisions of the federal milk license, which became effective on March 2, 1934, superseding a marketing plan approved and incorporated into a federal marketing agreement on November 25, 1933, after the passage of the Agricultural Adjustment Act.

The objectives and accomplishments of the principal organizations which influence the production and marketing of milk in this area are described in the following pages.

Sanitary Milk Producers

The Sanitary Milk Producers is a collective milk-bargaining association of producers located in the St. Louis milkshed. It was organized in 1929 for the following purposes:¹

1. "Standardization and improvement of milk and dairy products.
2. "Collective bargaining in selling.
3. "Control of surplus and supplying milk as the market demands."²
4. "Checking weights and tests.
5. "Watching credit rating of buyers.
6. "Issuing truthful market information.
7. "Advertising milk and dairy products to broaden the outlet."

In 1934 the association had a membership of about ten thousand producers organized into 112 local units. These producers supplied regularly 64 percent of the total volume of milk shipped to the St. Louis market (Fig. 2). The organization is an active member of the National Cooperative Milk Producers' Federation. Operating expenses of the association are financed by a membership fee and a "check-off" taken from the amounts due members for milk shipments. The amount of this check-off has varied from 3 to 5 cents a hundred pounds of milk; in December, 1934, it was 3 cents a hundred pounds of milk.

The management of this association has made steady progress in carrying out the program outlined above, and much of the improvement in the market organization in the St. Louis dairy district since 1929 can be credited to its activities.

Milk Distributor Groups

Milk distributors in the St. Louis sales area are not organized into a formal trade association. Since, however, three distributors buy two-thirds of the milk in the market and ten purchase nine-tenths of it, it is possible to effect working agreements without a formal association.

Milk dealers in the St. Louis market were represented in the joint conferences of distributors, producers, and consumers in the summer of 1930 (see page 137) by the representatives of the St. Louis Dairy Company, the Highland Dairy Company, and the Beatrice Creamery Company. Likewise, in the price conferences held in this market from 1930 to 1933 distributors were usually represented by individuals from the principal companies. These price conferences were discontinued upon the adoption of the federal marketing agreement.

¹As stated in the Illinois Agricultural Association Record, April, 1929, p. 1.

²The author suggests that this objective be changed to read: "adjustment of milk production to meet market demands."

In the early part of 1934 a group of small dealers in the St. Louis market organized into the Small Dealers' Association, which includes (December, 1934) twenty-five distributors. The association discusses and takes action on problems which are of mutual interest to these small dairies in the St. Louis market.

Another dealer organization in the city is the St. Louis Milk Exchange, which was organized in 1932. This organization provides for the systematic return of milk bottles and other milk packages to the original owners. For each package received from or returned to the exchange, milk dealers pay or receive a stipulated price. This is an economic way of lowering the very heavy losses that otherwise occur on milk bottles and other milk packages.

Consumers' Milk Commission

Much of the improvement in producer-distributor relations in the St. Louis market from 1930 to 1933 can be credited to the activities of the Consumers' Milk Commission.

This commission, sponsored by the St. Louis League of Women Voters, was organized March 3, 1930, at a meeting called by the Sanitary Milk Producers, at which it was explained that the serious financial condition of the dairymen who produced the supply of milk for St. Louis seemed likely to be reflected in a poorer quality of milk delivered into the city.

On June 4, 1930, in the headquarters of the League, the first of a series of three conferences was held by eighteen persons representing dealers, producers, and the Consumers' Milk Commission. The purpose of this meeting was to consider the objectives of the Sanitary Milk Producers and dealers' reactions to the development of a marketing plan for the purchase and sale of milk in this area. On July 7, 1930, this large group was reduced to a joint conference committee of nine—three members representing dealers, three representing producers, and three representing consumers.¹

Four conferences by this committee were held to discuss milk marketing agreements and price plans. In August, 1930, the committee agreed upon provisions for a marketing plan, and the consumer repre-

¹Dealer representatives were: B. M. Lide, Jr., president of the St. Louis Dairy Company; Bruno Tschannen of the Highland Dairy Company; and H. W. Barr, president of the Beatrice Creamery Company. E. W. Tiedeman, A. D. Lynch, and George Grueninger represented the Sanitary Milk Producers. Consumers were represented by Mrs. George Gellhorn, Mrs. W. W. Burke, and Mrs. Virgil Loeb. Mrs. Loeb was made chairman of the committee at the joint conference.

sentatives of the committee presented a report of their activities. From 1930 to 1933 the Consumers' Milk Commission was represented at each of the price conferences which took place in the St. Louis market. As stated above, these conferences ceased with the adoption of the federal milk marketing agreement.

The writer is convinced that the type of conference sponsored and developed by this commission is a definite help in solving producer-distributor-consumer problems and differences in this market, and might well be reestablished.

St. Louis Consumers' Council

The Consumers' Council of St. Louis and St. Louis county, one of 200 such councils set up thru the nation by the National Emergency Council, was organized in May, 1934.

Members of local councils are appointed by the local chairman, who is in turn appointed by the National Emergency Council. Members of the St. Louis Consumers' Council serve without pay and are chosen because of their reputations as public-spirited and informed members of the community. Specialists in social sciences, those who have had practical experience in marketing organization work, and specialists in research are included in the membership.¹

The main purpose of the St. Louis Consumers' Council is to focus consumers' endeavors and to give consumers adequate representation in solving local problems, as well as to obtain and disseminate information relating to retail prices and standards of quality. It has taken definite action toward improving the quality of milk in St. Louis. Two major provisions of its present program are (1) to improve present standards for obtaining milk of high quality; and (2) to insure adequate financing and a nonpolitical personnel for the enforcement of a quality improvement program.

This organization had an important part in effecting the passage of an ordinance which became effective December, 1934, governing

¹The present members (December, 1934) of the Council are: Mrs. Roscoe Anderson, chairman; Reverend Father W. F. Mullally, vice-chairman; Mrs. Herman Maas, secretary; Mrs. George A. Bass, Mrs. F. B. Bowles, Miss Esther Lee Bride, Mrs. W. W. Burke, Mrs. Walston Chubb, Mr. Ralph Fletcher, Mrs. George Gellhorn, Dr. George M. Gibson, Mr. Raymond Howes, Dr. F. M. Isserman, Mrs. Edmund J. Kerber, Mr. Joseph M. Klamon, Mrs. Virgil Loeb, Bishop William J. Scarlett, Dr. David C. Todd, Mrs. W. Victor Weir, Mr. Tyrell Williams. It will be observed that Mrs. Gellhorn, Mrs. Loeb, and Mrs. Burke, formerly members of the Consumers' Milk Commission, are now members of the Consumers' Council. Mr. J. C. Waldron, the survey secretary of the Council, is engaged in assembling and disseminating facts pertaining to Council activities.

quality requirements for milk and providing methods for financing their enforcement.

St. Louis Division of Public Health

The St. Louis Division of Public Health is responsible for maintaining inspection and control of the quality of milk and milk products sold in the city of St. Louis. Specific provisions for controlling the quality of milk and milk products prior to November, 1934, were included in an ordinance approved March 21, 1928. A new ordinance, as mentioned above, containing requirements more stringent than those previously in force, became effective on November 22, 1934.

In practice the Division of Public Health in St. Louis was very lax in enforcing quality requirements included in the ordinance of 1928. As a result dairymen producing high-quality milk were penalized; and those producing low-quality milk benefited, since producers were paid the same price for milk regardless of quality. Furthermore milk of lower quality than specified as minimum quality by the ordinance was permitted to be offered for sale to consumers. Part of the laxity in enforcing quality requirements can be attributed to lack of funds for carrying out an effective program.

Certain requirements under the 1928 ordinance were much lower

TABLE 13.—MAXIMUM NUMBER OF BACTERIA PERMITTED IN MILK BEFORE AND AFTER PASTEURIZATION, IN 14 CITIES OF THE UNITED STATES WITH MORE THAN 500,000 POPULATION, JULY, 1934^a

City	Maximum bacteria count before pasteurization	Maximum bacteria count after pasteurization
Baltimore.....	200 000	30 000
Boston.....	750 000	50 000
Buffalo.....	100 000	30 000
Chicago ^b	750 000 Oct. to April	50 000 Oct.-Apr.
	1 000 000 May to Sept.	100 000 May-Sept.
Cleveland.....	1 000 000	100 000
Detroit.....	Not fixed	Not fixed
Los Angeles.....	150 000	15 000
Milwaukee.....	Not fixed	250 000
Minneapolis.....	1 000 000	25 000
New York.....	750 000 if to be pasteurized in city	50 000
	300 000 if to be pasteurized outside city	
Philadelphia.....	Not fixed	50 000
Pittsburgh.....	Not fixed	Not fixed
St. Louis ^c	4 000 000	100 000
San Francisco.....	150 000	15 000

^aSources of data are given on page 181, Appendix.

^bThe Chicago ordinance was revised in December, 1934, to include a maximum bacteria count of 200,000 before pasteurization and 30,000 after pasteurization, no seasonal variation being permitted.

^cThe St. Louis ordinance was revised in December, 1934, to include a maximum bacteria count of 1,500,000 before pasteurization.

than those of other large markets in the country. The requirements for raw milk to be pasteurized were the most lenient of the ten largest markets of the country that include definite bacteria counts in their ordinances (Table 13). In St. Louis the maximum bacteria count of raw milk before pasteurization was 4 million per cubic centimeter, four times the count permitted at Cleveland, Chicago, and Minneapolis, which permit a maximum of one million per cubic centimeter, and twenty-seven times that of Los Angeles and San Francisco, which permit a maximum of only 150,000 per cubic centimeter. The maximum bacteria count *after* pasteurization was the same as that for Chicago and Cleveland and lower than that for Milwaukee.

In the new ordinance the bacteria counts permitted in the raw milk to be pasteurized for sale have been materially reduced, and consumers will be assured of clean, safe milk if the specified quality requirements are enforced.

St. Louis District Dairy Council and Dairy Commission

The St. Louis District Dairy Council was organized on February 1, 1931, for the purpose of bringing about a greater consumption of milk thru a general educational program stressing the importance of milk and milk products in a well-ordered diet. The subject of food and nutrition as a necessary part of a general health program is presented by staff members thru cooperation with educational and health agencies, by personal contact and letter, by distribution of leaflets and posters, and by the showing of plays and motion pictures.

Funds to support the Dairy Council's activities have been contributed by milk distributors and producers in the St. Louis district. Under an agreement between these two groups, which became effective in December, 1934, the educational program of the Dairy Council became part of the program of the Dairy Commission of St. Louis. This commission also is financed jointly by producers and distributors.

The Dairy Council and the Dairy Commission work with public, private, and parochial school teachers, boys' and girls' clubs, parent-teacher associations, community clubs, church and fraternal organizations, the health department, and various individual groups. The type of information included in the educational programs assembled for these organizations furnishes a constructive basis for increasing the consumption of milk and dairy products. Perhaps the only word of caution for this organization is that the expenditure of funds for the purpose of increasing consumption of dairy products be carefully planned in order to insure results commensurate with their cost.

Production Credit Associations

More stringent requirements concerning the quality of milk to be offered for sale in St. Louis are likely soon to force many farmers in the St. Louis milkshed to purchase new equipment. The cooperative production credit system, recently established thruout the United States, affords an economical way for producers with adequate security to obtain loans for these purposes.

One of the twelve Production Credit Corporations is located at St. Louis. Production credit associations that are branches of the Production Credit Corporation, serving the producers in the St. Louis milkshed, are located at Carrollton, Carlinville, Belleville, Shelbyville, and Mt. Vernon in Illinois, and Bloomfield, Farmington, Hannibal, Rolla, O'Fallon, St. Joseph, Steelville, and West Plains in Missouri.

The current rate of interest to borrowers in production credit associations is 5 percent for the actual time that the money is in use. Loans to dairymen can be made for one year but will be considered for a period not to exceed three years. Renewals are contingent upon new application, inspection, and approval of the collateral offered as security.

The estimated cost of the inspection fee for obtaining a loan of \$150 to \$200 is \$2.00, and other costs incident to a loan usually do not exceed \$1.50. On an annual basis the interest and charges on a \$200 loan are about 6.5 percent.

To be eligible for a loan, each borrower must become a member of the association and must purchase five dollars' worth of Class B stock for each \$100 borrowed. After a loan has been repaid, this stock can be listed with the production credit association to be sold, according to the present policy of the Farm Credit Administration, to new borrowers that qualify for loans before new stock is issued. In this manner it is possible for old borrowers to retire their investment in the stock.

All loans to producers of fluid milk are customarily retired on a monthly repayment plan with a minimum monthly repayment of 3 percent of the money borrowed. It is also customary to ascertain that the borrower has a definite milk base, and then to have the purchaser of the milk accept an assignment to make deductions from the monthly milk check and remit these to the local association making the loan. It is believed that many producers in this milkshed will find it profitable to make use of these new credit facilities.¹

¹Complete detailed instructions for obtaining a loan can be secured by applying to the nearest production credit association or to the Production Credit Corporation, St. Louis, Missouri.

Dairy Herd Improvement Associations

Dairy herd improvement associations have been in existence in the Middle West for more than twenty years. The principal objective of the associations is to increase efficiency in the production of milk, so that farmers may realize higher net returns from their dairy herds, this objective to be realized by:

1. Improving feeding practices
2. Rigid culling of unprofitable cows
3. Improving dairy herds thru the location of families of cows of outstanding merit.
4. Improving herd sires
5. Increasing the owner's interest in his dairy herd

Records kept by these associations show clearly that one of the best ways for a producer to realize better returns above feed costs is to increase his production per cow. Thus in 1933, 383 cows producing more than 500 pounds of butterfat per cow returned an average of \$133.84 per cow above feed costs; whereas cows producing less than 150 pounds of butterfat returned an average of only \$7.76 above feed costs (Fig. 33 and Table 14).

The need for broader adoption by producers in the St. Louis milkshed of practices that will improve their productive efficiency is emphasized by comparing the average annual production per cow in this area with that for all Illinois cows and for all cows in dairy herd im-

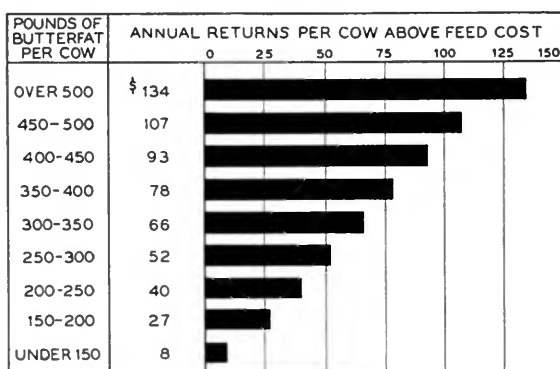


FIG. 33.—RETURNS PER COW AS RELATED TO VOLUME OF BUTTERFAT

As production per cow increases, returns above feed costs increase. Thus for cows producing over 500 pounds of butterfat, the returns above feed costs averaged \$133.84 per cow; while for cows producing less than 150 pounds of butterfat the returns averaged only \$7.75 above feed costs. This graph is based on the records of 53 dairy herd improvement associations in Illinois in 1933.

TABLE 14.—AVERAGE RETURNS PER COW ABOVE FEED COSTS, AS RELATED TO PRODUCTION PER COW, FROM RECORDS OF 53 ILLINOIS DAIRY HERD IMPROVEMENT ASSOCIATIONS, 1933*

Pounds of butterfat	Number of cows	Fat per cow	Returns per cow above feed cost
		<i>lbs.</i>	
500 and over.....	383	553.6	\$133.84
450-499.....	544	472.1	107.05
400-449.....	1 088	421.8	93.35
350-399.....	2 095	373.0	77.92
300-349.....	2 799	324.0	65.67
250-299.....	2 562	276.3	51.99
200-249.....	1 499	229.2	40.33
150-199.....	531	180.2	26.78
Under 150.....	189	118.4	7.76

*Rhode, C. S., and Cash, J. G., "A Year's Progress in Dairy Herd Improvement." Univ. of Ill., Dept. of Dairy Husbandry, April, 1934. Mimeo.

provement associations in Illinois. The average milk production in the St. Louis milkshed in 1934 was 4,161 pounds per cow, whereas the Illinois average was 4,690 pounds per cow, and the average in 1933 for all dairy herd improvement associations in Illinois was 8,331 pounds per cow.

The following associations are now operating in Illinois in the St. Louis milkshed: Jersey-Greene-Morgan Association; St. Clair-Monroe-Randolph Association; Effingham County Association; Montgomery-Macoupin Association; and Macoupin-Madison Association. On the Missouri side of the St. Louis milkshed the following associations are operating: Ralls-Marion Association; Pike-Lincoln Association; St. Charles-St. Louis Association; and Jefferson Association.

Since dairy herd improvement associations afford a practical way for farmers to obtain help in increasing the efficiency of their production, and since the benefits of these associations extend much farther than to participating members, these associations should be given encouragement by all persons and agencies concerned in improving production practices in this area.

PRESENT POLICIES UNDER FEDERAL MILK LICENSE

Under Section 8 of the Agricultural Adjustment Act approved May 12, 1933, the Secretary of Agriculture was given power to issue licenses which would assist in bringing about improvements in the marketing of milk. The powers specified in the act are:

"To issue licenses permitting processors, associations of producers and others to engage in the handling, in the current of interstate or foreign commerce, of any agricultural commodity or product thereof, or any com-

peting commodity or product thereof. Such licenses shall be subject to such terms and conditions, not in conflict with existing Acts of Congress or regulations pursuant thereto, as may be necessary to eliminate unfair practices or charges that prevent or tend to prevent the effectuation of the declared policy and the restoration of normal economic conditions in the marketing of such commodities or products and the financing thereof.

"To require any licensee under this section to furnish such reports as to quantities of agricultural commodities or products thereof bought and sold and the prices thereof, and as to trade practices and charges, and to keep such systems of accounts, as may be necessary for the purpose of part 2 of this title."

Purposes and Scope of License

Under the authority of the above act, the Agricultural Adjustment Administration, upon the request of the Sanitary Milk Producers, issued a milk license applicable to all milk producers and distributors in the St. Louis sales area. The license, which became effective on March 2, 1934, embodies the following statement of purposes and powers:

1. To increase the income of the dairy farmer.
2. To increase the farmer's share in the management and operation of his own market.
3. To maintain proper relationships between producers on the same market and between groups of producers in different markets.
4. To provide reasonable protection to the consumer.
5. To define use-classifications which shall be employed as the basis for sale of milk to distributors, and to require each distributor to submit monthly reports of the sale of milk in each of these classifications.
6. To fix minimum prices for each classification to be paid by each distributor in the St. Louis sales area for whole milk received from producers.
7. To change classification prices from time to time as necessitated by changes in market conditions.
8. To define zones and fix transportation differentials for milk received outside of the St. Louis sales area.

Functions of Milk Market Administrator

In order to carry out the provisions of the federal milk license, the office of Milk Market Administrator was created by the Secretary of Agriculture, under the authority of the Agricultural Adjustment Act. In the St. Louis dairy district the responsibilities of this office are principally the following:

1. To operate a market pool and an equalization fund, in order (a) to assure competing distributors that each will pay the same price for milk in the same classification, and to prevent by this as-

surance destructive distributor competition and price-cutting in the purchase of milk from producers; (b) to distribute, on a fair basis, proceeds to producers in the milkshed.

2. To audit books of each distributor in order to assure producers and competing distributors that the sales reported to the market administrator represent actual sales.
3. To request each distributor to furnish bond or other satisfactory surety that will guarantee to producers payment for milk purchased.
4. To check distributors' samples, weights, and butterfat tests of milk for producers who are not members of the Sanitary Milk Producers.
5. To furnish market information to producers, distributors, and consumers in the St. Louis dairy district.

In essence, these regulations are designed to eliminate some of the destructive market practices which have operated against the best interests of producers, distributors, and consumers in the St. Louis sales area.

Use-Classification Principle Recognized

A fundamental principle of milk marketing which is recognized in the St. Louis federal milk license is that distributors should pay for the milk they purchase, according to the way in which the milk is used. The practice of classifying milk according to its use is based upon differences in market values recognized by distributors and manufacturers who use the milk.

In the classified, or use, system of paying for milk there may be one price for milk used in fluid form, another price for milk separated to be used as cream, and still another price for milk manufactured into other products. When distributors and manufacturers pay for milk on a use basis, a market pool, together with an equalization fund, becomes necessary if payments for milk are to be fairly distributed to producers (see pages 152 to 155).

The classification, or use, price plan was in operation as far back as 1898. "In 1898, for a period of five or six years, the Boston milk contractors accounted for their surplus for what it was worth made into butter, and credited the market value of this surplus back to the producer."¹ The Dairymen's League Cooperative Association in New York State commenced to use this type of plan in May, 1921. Besides being used in Boston and New York, the plan is also in operation in Chicago, Cleveland, Detroit, Los Angeles, Pittsburgh, Baltimore, and Minneapolis-St. Paul, as well as in about seventy-five other cities in the

¹Personal communication from W. H. Bronson, Research Department, New England Milk Producers' Association, Boston.

United States; and it is generally recognized by students of milk marketing as being a distinct advance over previous methods used in the purchase and sale of milk.

The classes outlined in the St. Louis federal milk license¹ are three and are defined as follows:

"Class I milk means all milk sold or distributed by distributors as whole milk for consumption or use in the St. Louis Sales Area.

"Class II milk means all milk used by distributors to produce cream for consumption as cream, evaporated milk, condensed milk, flavored drinks, creamed buttermilk, and creamed cottage cheese, for sale or distribution by distributors in the St. Louis Sales Area, *Provided*, that the milk from which only the skimmed milk is used in the production of the above products shall not be included as Class II milk.

"Class III milk means the quantity of milk purchased, sold, used or distributed by distributors in excess of Class I and Class II milk."

Producer Prices in St. Louis Area

According to the federal milk license, prices for milk in the St. Louis sales area are based upon milk of 3.5-percent butterfat content delivered f.o.b. distributor's plant in the area. The prices which became effective on August 14, 1934, were as follows (per 100 pounds):

Class I milk, \$2.35; Class II milk, \$1.33; Class III milk, \$1.02. These prices were determined as follows:

Class I milk. The price for Class I milk, in any market, is the highest price that is obtainable when the principal economic factors in the particular area in which it is sold and the conditions and welfare of the dairy industry as a whole are taken into account. The above price remained in effect until November 16, 1934, when it was lowered to \$2.00 as a result of excessive quantities of milk coming to the market.

Class II milk. The price for Class II milk is determined by the formula: "For each 100 pounds of milk, 3.5 times the average price per pound of 92 score butter at wholesale in the Chicago market, as reported by the United States Department of Agriculture for the delivery period during which such milk is purchased, plus 30 percent thereof plus 20 cents." Applying this formula to the market conditions of September, 1934, we have:

3.5 times \$.2482 (price per pound of 92-score butter at wholesale in Chicago markets) equals \$.8687
 1.30 times \$.8687 equals \$1.13
 \$1.13 plus \$.20 equals \$1.33

¹Amended license for milk, St. Louis sales area, effective August 14, 1934.

Class III milk. For Class III milk the following formula is used: "For each 100 pounds of milk, 3.5 times the average price per pound of 92 score butter at wholesale in the Chicago market, as reported by the United States Department of Agriculture for the delivery period during which such milk is purchased plus 15 cents." Applying this formula we have:

3.5 times \$.2482 equals \$.87

\$.87 plus \$.15 equals \$1.02

Producer Prices Converted to Weighted Average

As a means of distributing payments for milk to producers, dairy-men in the St. Louis milkshed, beginning in the latter half of November, 1934,¹ were paid one price for their milk—a weighted average price based on the prices and volumes of milk of the different classes sold in the area, and subject of course to variation for butterfat content, transportation charges, and other differentials. This plan replaced the market-blend and excess prices² in effect from March to November, 1934.

The weighted average price, when milk is sold on a classified or "use" basis, is the quotient obtained by dividing the total market value of Class I, Class II, and Class III milk by the total volume of milk produced. For example, if we assume that of a total 200,000 pounds of milk, Class I sales consisted of 100,000 pounds at \$2.00 a hundredweight; Class II sales, 80,000 pounds at \$1.30 a hundredweight; and Class III sales, 20,000 pounds at \$1.00 a hundredweight, the total market value of the 200,000 pounds of milk was \$3,240. The weighted average price would then be \$1.62 a hundredweight (\$3,240 divided by 200,000).

While the use of a weighted average price is designed to distribute payments for milk more equitably among producers than the flat-price system formerly in use, the plan has rather serious disadvantages. Unless, for instance, some arrangement is included whereby prices are reduced during periods of low production costs and increased during periods of high production costs, the use of such a system encourages, rather than discourages, production during the months of low costs, when surpluses are already burdensome.

The effect of using a weighted average price for whole milk thru-

¹Under the license as amended November 14 to become effective November 16, 1934.

²The market-blend price was about equal to the weighted average of Class I and Class II milk prices, and the excess price equaled the price paid by distributors for Class III milk.

out the year is shown by production records in the New York milkshed since May, 1921, when this system of payment was adopted. The average daily increase in the milk production of about 15,000 dairymen in this area for the five Junes from 1926 to 1930, compared with the five Junes from 1921 to 1925, was 14.7 pounds higher per producer than the average increase for all sixty months of the later period compared with all sixty months of the earlier period. (Table 15 and Fig. 34).

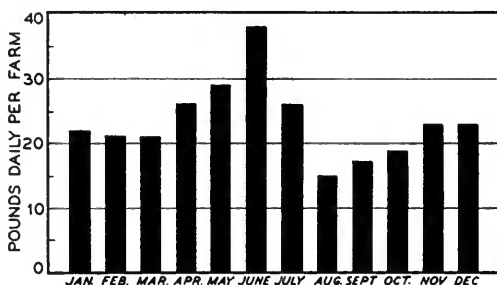


FIG. 34.—AVERAGE DAILY INCREASE IN MILK PRODUCTION PER FARM BY 15,000 DAIRYMEN IN NEW YORK STATE, 1926-1930 OVER 1922-1925, UNDER WEIGHTED AVERAGE PRICE PLAN OF PAYING FOR MILK

A weighted average price has been used since May, 1921, in paying producers in the New York milkshed. This has caused a greater increase in milk production in the spring and summer than in the shortage months, and consequently a widening of the area necessary to supply the whole-milk needs of the New York sales area.

The greater concentration of production in the months of low costs has caused a widening of the milkshed to meet the needs of the fluid-milk market during the months of higher costs and lower production; and the widening of the milkshed has in turn increased hauling costs and the operating costs of country and city plants in taking care of peak loads of production.

It would seem that the making of seasonal adjustments in the weighted average price for whole milk might be an effective way of inducing dairymen to adjust production more nearly to seasonal demands; but the fact is that such adjustments in the weighted average price have not proved practical, for there is a tendency to keep Class I prices at too high a level in months when production costs are low and at too low a level in months when production costs are high.

While the St. Louis market doubtless will benefit by the use of this system of paying milk producers, compared with a flat-price system,

TABLE 15.—AVERAGE DAILY MILK PRODUCTION PER FARM BY APPROXIMATELY 15,000 FARMS IN NEW YORK STATE, 1922-1925 AND 1926-1930,^a UNDER WEIGHTED AVERAGE PRICE PLAN
(Based on receipts at 250 plants; stated in pounds)

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Weighted average
1922-1925.....	209.8	222.8	245.1	265.2	295.8	312.2	254.3	213.6	202.5	198.7	183.3	197.0	233.9
1926-1930.....	232.0	244.0	266.3	291.5	324.8	349.8	280.4	228.7	219.7	218.0	206.0	220.3	256.8
Increase.....	22.2	21.2	21.2	26.3	29.0	37.6	26.1	15.1	17.2	19.3	22.7	23.3	22.9

^aCalculated from data included in New York (Cornell) Agr. Exp. Sta. Bul. 527, 1931, p. 105, Table 6.

there seems to be no evidence that it will help in the solution of the problem of seasonal surpluses, which is one of the troublesome problems in the industry.

Reasons for Price Differences Based on Milk Use

People not familiar with the fluid-milk business frequently ask why there should be differences in the prices paid by distributors for milk of different classes when "Class I milk is of no better quality than milk used as cream or in manufactured products."

The fact is that while a considerable volume of milk sold for manufacturing purposes is actually of the same quality as Class I milk, it need not be of as high quality to be acceptable for those purposes, it need not be produced to such a large extent in the high-cost months nor in high-cost seasons, and it need be transported in bulk form only to a country market, not to a city market. It therefore cannot command a price that is any higher than that for milk of acceptable quality produced under less costly conditions and delivered in bulk form nearer to the point of production.

The reasons for milk of Class I quality being more expensive to produce than milk for other purposes may be summarized as follows:

1. Requirements with respect to the conditions under which Class I milk is produced and marketed, and with respect to its final quality, are usually much more stringent than those for milk utilized in a condensery, creamery, or manufactured into other products. It costs producers money to meet these requirements. Since the surplus milk of Class I quality produced incidentally in the effort to meet the demand for Class I milk cannot be sold at a price commensurate with its unit production cost, the milk that is sold for fluid purposes must bear more than its unit cost. Thus the spread between the price of Class I milk and milk sold for other purposes becomes still wider than a proportionate difference in basic unit costs. If, in the future, it is required that milk utilized in manufacture be of the same quality and produced under the same conditions as Class I milk, the reasons for the difference between the prices of milk sold in these different classes would be removed except to the extent that differences in transportation costs continued to be operative.

2. The demand for Class I milk is just as great during months of high costs as during months of low costs (Fig. 29). Producers who adjust their year-round production in an attempt to meet this rather uniform demand must incur higher costs in certain months in order to do so. The necessity for meeting a constant demand regardless of

unusual conditions such as floods, drouths, or other events beyond the control of man, also increase the costs of producing Class I milk during such abnormal periods.

As to transportation, the purchasing points to which producers deliver milk for manufacturing purposes are in the country; hence transportation costs are less. Because of this fact, the price that a

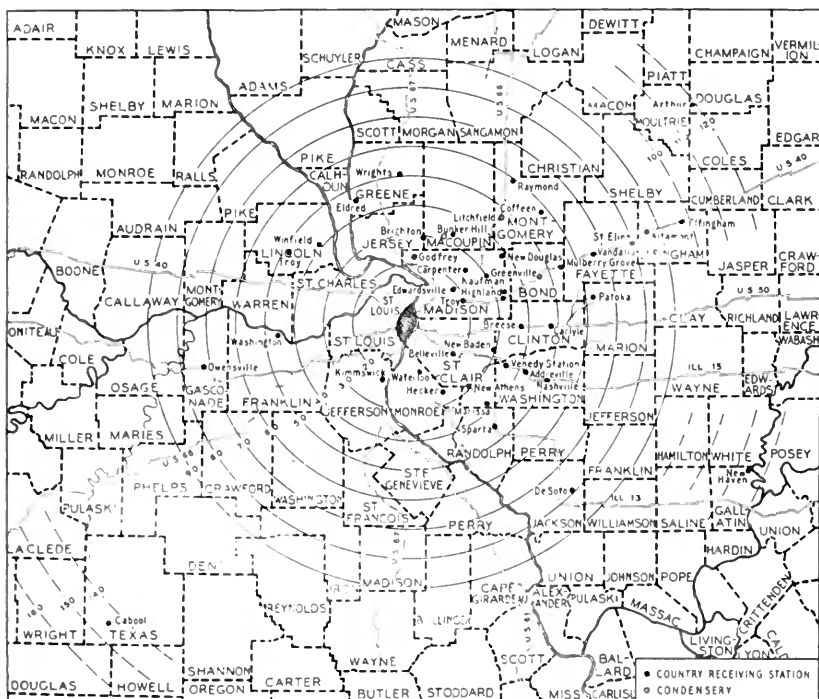


FIG. 35.—COUNTRY SHIPPING STATIONS AND TRANSPORTATION ZONES IN THE ST. LOUIS MILKSHED, 1934

Transportation deductions in the St. Louis milkshed are made on the basis of 10-mile zones. See Table 16.

producer gets for milk in any class is not the quoted f.o.b. city market price but the quoted price less a differential for transportation. It is therefore necessary, when comparing Class I milk prices with condensery prices or prices for milk to be used in other manufactured products, to make certain deductions from f.o.b. city milk prices before arriving at a just basis of comparing these prices at country points.

Transportation deductions which apply in the St. Louis milkshed under the St. Louis federal milk license are shown in Table 16; the zones are mapped in Fig. 35.

TABLE 16.—TRANSPORTATION DEDUCTIONS FROM PRICES OF MILK PURCHASED F.O.B. ST. LOUIS BY DISTRIBUTORS IN THE ST. LOUIS DAIRY DISTRICT, 1934*

Zone	Distance from St. Louis	Deductions per 100 pounds	
		Class I and Class II milk	Class III milk
	<i>miles</i>	<i>cents</i>	<i>cents</i>
1.....	...20	16	5
2.....	21-30	18	5
3.....	31-40	20	5
4.....	41-50	21	5
5.....	51-60	22	5
6.....	61-70	23	5
7.....	71-80	24	5
8.....	81-90	25	5
9.....	91-100	26	5
10.....	101-110	27	5
11.....	111-120	28	5
12.....	121-130	29	5
13.....	131-140	30	5
14.....	141-150	31	5
15.....	151-160	32	5

*These differentials became effective August 14, 1934.

Equalization Fund Eliminates Destructive Price Cutting

When producers are paid a market-blend or a weighted average price, unjust conditions may arise on the one hand among distributors competing for markets and using varying quantities of the different classes of milk and, on the other, among producers selling to different distributors. To overcome this possibility, the Dairy Division of the Agricultural Adjustment Administration, in cooperation with organized producers and distributors in the St. Louis market, introduced a price plan that includes the use of an equalization fund. By the use of this fund competition among distributors is changed from a struggle to obtain milk at the cheapest possible price to an attempt to lower their costs of distribution by more efficient handling. Producers, relieved from sharp price-cutting competition, may turn their attention to improving quality and to lowering their costs of production by more efficient practices.

How Plan Works for Distributors.—For distributors the essential feature of the equalization plan is that each distributor is enabled to pay the weighted average price for *all* the milk he buys, without loss

to himself or undue advantage over others because his purchases of milk are made up of relatively different proportions of the various classes than the purchases made by other dealers. The way in which the equalization fund works from the distribution angle is shown in Table 17.

Suppose two dealers, *Distributors A* and *B*, are operating on the same market. If *Distributor A* purchases 70,000 pounds of Class I milk at \$2.00 a hundredweight, 30,000 pounds of Class II milk at \$1.30, and no Class III milk, the total market value of this milk is \$1,790. If *Distributor B* purchases the same total amount of milk but the milk is differently classified—as, for example, 30,000 pounds of Class II milk and 20,000 pounds of Class III milk, the total market

TABLE 17.—EXAMPLE OF METHOD USED FOR DETERMINING THE WEIGHTED AVERAGE PRICE OF MILK TO PRODUCERS AND THE OPERATION OF THE EQUALIZATION FUND^a

Classes of milk bought	Pounds	Price per 100 pound	Market value	Payments to producers	Clearances in equalization fund
Total producers' sales to given market					
Class I.....	100 000	\$2.00	\$2 000	.....	.....
Class II.....	80 000	1.30	1 040	.....	.....
Class III.....	20 000	1.00	200	.....	.....
Total.....	200 000	.....	3 240	.....	.....
Weighted average price....	.....	1.62	.....	.....	.....
Payments by Distributor A, buying Class I and Class II milk					
Class I.....	70 000	\$2.00	\$1 400	.....	.....
Class II.....	30 000	1.30	390	.....	.....
Total purchases.....	100 000	.....	1 790	.....	.....
Average market value.....	.....	1.79	.....	.....	.....
Payments to producers at weighted average price....	100 000	1.62	.....	\$1 620	.....
Difference paid to equalization fund.....	.....	.....	.....	.....	\$170
Payments by Distributor B, buying Class I, Class II, and Class III milk					
Class I.....	30 000	\$2 00	\$ 600	.....	.....
Class II.....	50 000	1.30	650	.....	.....
Class III.....	20 000	1.00	200	.....	.....
Total purchases.....	100 000	.....	1 450	.....	.....
Aver. market value.....	.....	1.45	.....	.....	.....
Payments to producers at weighted average price....	100 000	1.62	.....	\$1 620	.....
Difference paid from equalization fund.....	.....	.....	.....	.....	-\$170
Net difference.....	.....	.....	.....	.....	0

^aIn this example it is assumed that the base and excess volumes of *Distributors A* and *B* were exactly the same.

value of *Distributor B's* milk is \$1,450. But each distributor is required actually to pay the weighted average price (explained on page 147), which in this case is \$1.62 a hundredweight (Table 17). *Distributor A* would therefore pay \$1,620 for his 100,000 pounds of milk worth \$1,790, and *Distributor B* would pay \$1,620 for his 100,000 pounds worth \$1,450.

It is at this point that the equalization fund comes into use. *A* is required to *turn over to the fund* \$170, the amount by which the market value of his milk exceeded the amount he was required to pay for it. *Distributor B* receives from the fund \$170, which is the amount by which his payment to producers exceeded the market value of the milk he bought. In this way these two distributors, altho using different quantities of the various classes of milk, pay to producers the same weighted average price for all the milk they buy.

How Plan Works for Producers.—To ascertain how the equalization plan works for producers, we may assume that *Farmer Jones* ships milk to *Distributor A*, and *Farmer Brown*, his neighbor across the road, ships to *Distributor B*. If *Farmer Jones* were paid by *Distributor A* a weighted average price for all the milk which *A* bought of him, he would be paid \$1.79 a hundredweight for it. Under the same scheme *Farmer Brown* selling to *Distributor B* would receive only \$1.45 a hundredweight for milk of presumably the same quality. Obviously *Farmer Brown* would be dissatisfied. He and other farmers so situated would undoubtedly quit selling to *Distributor B* and would try to sell to *A*, with resulting instability and destructive competition. But when, thru the operation of the equalization fund, distributors are enabled to pay one weighted average price for all the milk they buy, this source of competition and dissatisfaction among producers is removed.

The weakness of this plan, from the production angle, is that it includes the use of one average price for milk thruout the year, and thus intensifies the surplus problem, as pointed out on pages 128 to 130.

Accurate Audits of Distributors' Records Essential to Plan.—It is evident from the foregoing discussion that the payment of a weighted average price and the operation of an equalization fund is possible only when bookkeeping operations are both accurate and open. In order to provide this service, the federal license gives the Market Administrator certain definite auditing powers, as follows:

"The Market Administrator shall have the right . . . to examine the books and records of the distributors and the books and records of affiliates and subsidiaries of each distributor for the purpose of (1) verifying the reports and information furnished to the Market Administrator by each

distributor pursuant to this License and/or (2) obtaining the information from any distributor in the event such distributor fails to furnish reports or information as required by this License.”

In pursuance to this provision, the distributors in the St. Louis sales area are required to submit monthly reports to the Market Administrator showing the volumes of each of the three classes of milk they have handled. The license, as may be noted from the above quotations, specifically empowers the Market Administrator to verify these reports. This provision is essential to the success of the plan, for failure to report sales accurately would result in unfair competition between dealers and in losses to farmers who were not paid the full market value for their milk.

Since the initiation of the federal milk license in March, 1934, a force of auditors has been at work in the St. Louis market verifying the reports submitted by dealers.

Distributors Bonded to Insure Pay to Producers

For the adequate protection of producers it is essential that all distributors be able to meet their financial obligations to producers when due; and for that reason, under the federal license, distributors reporting sales may be required to furnish bond to the Market Administrator in an amount not in excess of the purchase value of two months' supply of milk.

If the Market Administrator is satisfied that a distributor can fulfill his obligations to pay for milk purchased, he may waive the requirement for bond from such distributor; but the authority to place distributors under bond for this purpose is essential to securing for producers adequate protection against distributors' insolvency.

All Producers Contribute to Service Fund

The effective operation of the federal milk license, or any other comprehensive plan for administering a city milk supply, calls for funds with which to pay for certain services that must be available to producers if they are to conduct their business operations intelligently and be assured of fair treatment in certain technical aspects of their transactions.

A large number of producers in the St. Louis milkshed have procured some of the necessary services by organizing into the association known as the Sanitary Milk Producers. Others have worked

¹Amended license for milk, St. Louis sales area, effective August 14, 1934.

blindly or ineffectively without such service; while others have benefited from the information that is made available thru the efforts of the organized farmers.

In order to provide producers generally with authentic market information and assure them proper weights and tests, the federal milk license gives the Market Administrator authority to deduct 3 cents a hundred pounds from the amount due producers for milk sold to distributors. The following paragraph on this point is quoted from the license:¹

"Each distributor shall deduct for marketing services three (3) cents per hundredweight of milk from the payments to be made pursuant to article IX for all milk delivered to such distributor by producers, and on or before the 15th day after the end of each delivery period, pay such amount to the Market Administrator. Such monies shall be expended by the Market Administrator, in a manner hereinafter prescribed, for the purposes of securing to producers the following services: (a) market information, (b) supervision of weights and tests, (c) to the extent that funds permit, the establishment and maintenance of a reserve fund for protection against the failure of distributors to make payments for milk purchased, and (d) other similar benefits. The Market Administrator shall pay to the Sanitary Milk Producers, Inc., hereinafter called 'the Association,' such amounts as are deducted pursuant to this section, from payments to producers who are members of the Association, for purposes of securing the aforementioned benefits for such members."

Thus the interests of the organized farmers are left in the hands of their organization; whereas the interests of nonmember producers are the responsibility of the Market Administrator, whose representatives make careful investigations to ascertain that they are being served in the most efficient manner. Carrying out the provisions of the license, the Market Administrator collects market information and disseminates it thru a "Market Review" issued monthly and sent to nonmember producers. A force of check-testers is employed to supervise weights and tests and so assure to nonmembers accurate weights and butterfat tests by dealers.

While the services of the Milk Market Administrator and those of the Sanitary Milk Producers are similar in some respects, there is no real conflict in their activities. Both agencies issue reliable market information, and both check weights and tests for producers, but they reach entirely different groups of producers, the federal agency supplementing rather than supplanting the services of the Sanitary Milk Producers.² In certain functions, however,—the broadening of market

¹As amended November 14, 1934, Sec. 2, p. 13.

²See page 136 for objectives of Sanitary Milk Producers.

outlets, furnishing the initiative in obtaining advances in price when warranted by market conditions, or in preventing unwarranted decreases in prices to producers—the association of producers is not supplemented by government activities.

Price Conferences a Necessary Part of Any Plan

The problem of price is the most controversial problem in a milk market. Under the present federal license, the Dairy Division of the Agricultural Adjustment Administration is given the power to fix minimum prices for each classification of milk to be paid by each distributor in the St. Louis sales area for whole milk received from producers.

It is the writer's belief, however, that an amendment to the federal license providing that conferences between producers, distributors, and consumers should precede any contemplated changes in prices or classifications, would be highly desirable. To be effective such conferences would need to include representatives of the above groups, each group having the privilege of assembling and presenting facts to the conference as a whole and participating openly in the discussion. Recommendations on which the group as a whole might agree could be sent to the officials of the Agricultural Adjustment Administration as one report. Groups, or even individuals, who failed to agree on any important point would have the privilege of submitting separate reports to the Administration. The federal representatives would thereupon act as arbiters and return their decisions on the suggested changes.

Existing organizations might well be recognized in the selection of representatives to such conferences. The Sanitary Milk Producers are capable of representing producers, the St. Louis Consumers' Council, consumers, and individuals from the principal companies and representatives of the Small Dealers' Association might represent the dealers.

The good will developed and fostered by such conferences would make for mutual understanding and friendliness, replacing the controversies and animosities that have so often characterized the relations existing between the different groups concerned in the whole-milk industry.

SUMMARY

1. The present consumption of milk in the St. Louis area (.42 pint daily per person) is the lowest of that in the 14 largest cities in the United States. It is only one-third that recommended as desirable by nutrition authorities and approximately half the amount generally considered the minimum for the maintenance of good health.

2. Increased consumption of milk in the St. Louis area would benefit producers as well as consumers. Were the present per-capita consumption raised to the present per-capita consumption at Boston (.77 pint daily) and the increased sales furnished by dairymen now supplying the market, producers in the St. Louis milkshed would benefit to the extent of about \$1,300,000 a year. This would mean an average increase of more than \$125 a year gross income to each producer.

3. A major increase in milk consumption would also be of benefit to distributors. If handled by distributors now in the area, such an increase would reduce materially their unit operating costs, enabling them to maintain profitable businesses while narrowing the margin between the prices they pay for milk and those at which they sell it.

4. One of the major causes of the low per-capita consumption of milk in the St. Louis sales area is the low level of consumer incomes coupled with relatively high prices for milk. About one-third of the families in this area average only \$800 income annually and another third approximately \$1,600 annually. Low incomes have been an especially important deterrent to milk consumption during the past few years, when the price of milk has been relatively high compared with prices of competing foods. Retail prices of milk have averaged 2 cents a quart higher during the past two years than they would have averaged had they declined as much proportionately from the 1925-1929 level as the average retail price of all foods at St. Louis has declined.

5. Extremely high summer temperatures, combined with lack of refrigeration, are another basic cause for the low consumption of milk in St. Louis. The average summer temperature at this point is the highest of that in any of the 14 largest cities in the United States, yet nearly two-fifths of the families in the milk sales area have no refrigeration. The difficulty in keeping milk sweet is probably the most important reason for nearly one-third of the families in St. Louis not buying milk regularly.

6. The policy in St. Louis of maintaining store prices of milk at a level equal to retail delivery prices, or not more than one cent a quart below them, has tended to discourage store sales in this area. The effect of this policy on per-capita consumption is suggested by com-

parison with sales in Boston and New York. These cities, which have the highest percentage of store sales in the country, also are among the highest in per-capita consumption of milk. Furthermore the largest increases in the consumption of milk in these cities have occurred when store prices have ranged from 2 to 5 cents a quart lower than retail delivered prices.

7. The basic-surplus price plan adopted in the St. Louis milkshed in 1930 does not appear to have been the cause for the declining prices received by milk producers in this area during 1929-1933. A lowered general price-level, reduced consumers' incomes, and increased milk production as a result of an increase in the number of cattle and lowered feed prices all combined to depress prices to producers.

8. An upward movement in milk prices to St. Louis producers may be expected during the next few years. Such expectation is based, first, on probable increases in the general price-level and in consumers' incomes, and second, on a prospective decline in milk production in the country as a whole as a result of advancing feed prices and fewer cows.

RECOMMENDATIONS

1. In order to increase the per-capita consumption of milk in St. Louis, it is recommended (1) that the sale of milk thru stores which can furnish adequate refrigeration be encouraged in this city by establishing prices enough lower than retail prices of delivered milk to give consumers the full benefit of the lower cost of distribution; and (2) that the educational program of the Dairy Commission of St. Louis (formerly Dairy Council) be expanded to become a more effective instrument for increasing the consumption of milk and other dairy products.

2. Hauling routes from farms to milk plants in the St. Louis milkshed should be gradually rearranged in order to reduce excessive costs resulting from the duplication and overlapping of routes. It is estimated that farmers in this area could save from \$150,000 to \$200,000 yearly if routes were rearranged on an economic basis. Because of the importance of such changes to producers, distributors, and haulers, arrangements have been made for a careful analysis of the problem. If consumption of milk were increased at the same time, such an improvement could be effected without throwing any of the present haulers out of employment.

3. Since the basic-surplus plan for paying producers for milk contains certain features that tend to effect economies in the marketing

of milk and since it is not unlikely that this plan will again be introduced in the St. Louis milkshed within a few years, it is recommended that producers continue to so adjust their feeding and breeding practices as to bring about a more even production of milk thruout the year.

4. Specific regulations should be made as to the conditions under which milk may be produced for manufacturing purposes and under which it may be produced for the fluid market. Producers who have only a few cows, who have high hauling charges, or who cannot afford to meet the quality requirements of this milkshed, should be encouraged to find more profitable outlets thru condenseries, creameries, or cheese factories.

5. Milk producers should be encouraged to increase their dairy income by adopting more efficient production practices. The greater use of dairy herd improvement associations and the keeping of more adequate farm accounts are worth wider consideration. The production and sale of milk cows, poultry, eggs, and meat as sidelines is also recommended as a practical means for dairy farmers in this milkshed to increase their incomes.¹

6. The programs of the St. Louis Consumers' Council, or St. Louis Dairy Commission, and the Sanitary Milk Producers are basically sound and should be continued. In addition to their present programs, it is recommended that the Dairy Commission and the Sanitary Milk Producers have careful studies made of their activities, in order to ascertain whether their funds are so spent as to be productive of the greatest possible service.

7. The principal functions of the Agricultural Adjustment Administration and the Milk Market Administration in the fluid milk industry are economically sound and should be continued by some agency, federal or other. *The services of the federal government in the St. Louis market would be materially strengthened if provision were made in the license for reestablishing price conferences between producers, distributors, and consumers.*

8. Research studies of important problems confronting producers, distributors, and consumers of milk should be continued in order to furnish a factual basis for determining policies that will be mutually beneficial. Only by the joint efforts of different groups in the industry, thru conclusions reached in such studies, are harmonious solutions of problems possible.

¹See Ill. Agr. Exp. Sta. Buls. 374 and 403.

APPENDIX

TABLE 18.—POPULATION OF THE MILK SALES AREAS AND CONSUMPTION OF WHOLE MILK IN 14 CITIES IN THE UNITED STATES HAVING POPULATIONS OF MORE THAN 500,000 PEOPLE, MAY, 1934^a

Area	Class I sales		Whole-milk sales of producer-distributors	Total whole-milk sales	Population of sales area	Average daily consumption	
	Reported	Not reported				Total	Per capita
	lbs.	lbs.				thousands of pints	pints
Baltimore.....	74 716 800	6 226 000	6 226 000	87 168 800	1 047 500	448.0	.428
Boston							
Market Administration.....							
U. S. Bureau of Agricultural Economics.....	46 698 900	5 771 775	.....	52 470 675	2 052 000	1 574.5	.767
Buffalo.....	7 707 173	1 710 572	.....	42 820 088	1 687 600	1 284.9	.761
Chicago.....	84 375 331	3 375 000	1 373 500	9 417 745	586 300	282.6	.482
Cleveland.....	21 345 592	6 631 344	1 356 018	89 123 831	4 952 700	2 674.4	.540
Detroit.....	37 852 583	244 000	616 000	29 332 954	1 385 400	880.2	.635
Los Angeles.....	39 051 102	13 037 000	.....	38 712 583	2 174 000	1 161.7	.534
Milwaukee.....	14 603 924	1 460 000	292 000	52 088 102	2 485 000	1 615.1	.650
Minneapolis.....	136 504 890	6 825 000	2 730 000	16 355 924	761 800	490.8	.644
New York.....	239 070 970	.....	.....	146 059 890	516 000	372.2	.721
Philadelphia.....	53 134 842	.....	.....	239 070 970	10 275 400	7 173.9	.698
Pittsburgh.....	15 830 068	9 910 000	987 000	53 134 842	2 674 100	1 594.4	.596
St. Louis.....	18 091 395	.....	294 500	16 727 068	1 400 800	802.0	.573
San Francisco.....	.....	.....	.....	18 385 895	1 303 100	551.7	.423
					645 700	339.4	.526

^aFor sources of population figures see Table 19, page 162. For sources of sales data for each area, see notes on next page.

(Sources of Sales Data in Table 18)

Baltimore. Figures are for Jan.-June, 1934. *Class I sales reported:* as reported to I. W. Heaps, Secretary-Treasurer, Maryland State Dairymen's Association. *Class I sales not reported:* estimate of I. W. Heaps. *Sales of producer-distributors:* estimated same volume as Class I sales which were not reported.

Boston. Market Administration. *Class I sales reported:* as reported to Einar Jensen, Milk Market Administrator of greater Boston milk sales area, and including sales of producer distributors. *Class I sales not reported:* estimate of Einar Jensen.

Boston. U. S. Bureau of Agricultural Economics. From monthly milk and cream reports. See Ill. Agr. Exp. Sta. Bul. 397, p. 447, Table 26.

Buffalo. *Class I sales reported:* as reported to Department of Health. *Class I sales not reported:* estimate of H. W. Mumford, Jr., Cornell University, Ithaca, New York.

Chicago. *Class I sales reported:* as reported to Market Administrator of Chicago milk sales area. *Class I sales not reported:* estimate of Frank C. Baker, Market Administrator. *Sales of producer-distributors:* estimated to bear the same relation to reported Class I sales as in the St. Louis milk sales area.

Cleveland. *Class I sales reported:* as reported to the Dairymen's Cooperative Sales Association, Cleveland, Ohio. *Class I sales not reported:* estimated. *Sales of producer-distributors:* estimated to bear same relation to Class I sales as in Pittsburgh milk sales area.

Detroit. *Class I sales reported:* as reported to Milk Market Administrator, Detroit milk sales area. *Class I sales not reported:* estimate of E. M. Bailey, Milk Market Administrator, Detroit milk sales area. *Sales of producer-distributors:* estimated to bear same relation to total reported sales as in the St. Louis sales area.

Los Angeles. *Class I sales reported (June 1934):* as reported to Milk Market Administrator, Los Angeles milk sales area. *Class I sales not reported (June 1934):* estimate of H. C. Darger, Market Administrator.

Milwaukee. *Class I sales reported:* as reported to the Department of Health. *Class I sales not reported and whole milk sales of producer-distributors:* estimates of C. F. Dineen, Milwaukee Cooperative Milk Producers.

Minneapolis. *Class I sales reported (1933):* as reported to Department of Public Health, Minneapolis, and obtained thru courtesy of W. C. Waite, University of Minnesota. *Class I sales not reported (1933):* estimated. *Sales of producer-distributors (1933):* estimated to bear the same relation to reported Class I sales as in the Milwaukee milk sales area.

New York. From monthly milk and cream reports, U. S. Bureau of Agricultural Economics.

Philadelphia. From monthly milk and cream reports, U. S. Bureau of Agricultural Economics.

Pittsburgh. *Class I sales reported:* determined from Dairymen's Cooperative Sales Association's reports, Pittsburgh, Penn., and from Penn. Agr. Exp. Sta. Tech. Paper 641, p. 5. Three percent of the reported Class I sales for May, 1934, was subtracted from the totals reported in order to allow for sales of Allegheny county dealers outside the county. *Class I sales not reported:* based on Dairymen's Cooperative Sales Association's percentage of total fluid-milk sales in Allegheny county. Percentage derived from Penn. Agr. Exp. Sta. Tech. Paper 641, p. 11. *Sales of producer-distributors:* determined from data on number of cows in Penn. Agr. Exp. Sta. Tech. Paper 641, p. 2, and average production per cow in Pennsylvania in 1933 as stated in the U. S. D. A. Yearbook, 1934, p. 629.

St. Louis. *Class I sales reported:* as reported to St. Louis Milk Market Administrator under U. S. License No. 35. *Sales of producer-distributors:* based on sales of 95 producer-distributors with average sales of 100 pounds of milk daily.

San Francisco. Figures are for 1932. See Ill. Agr. Exp. Sta. Bul. 397, Table 17, p. 450.

TABLE 19.—POPULATION OF MILK SALES AREAS OF 14 CITIES IN THE UNITED STATES HAVING MORE THAN 500,000 PEOPLE, 1934

Area ^b	Population ^a					Nonfarm 1934
	1920	1930			Percent increase in total popu- lation 1920-1930	
		Total	Farm	Nonfarm		
Baltimore.....	928 636	1 065 892	45 065	1 020 827	14.8	1 047 500
Boston						
Market Administration.....	1 729 772	1 998 867	2 029	1 996 838	15.6	2 052 000
U. S. Bureau of Agricultural Economics.....						1 687 600
Buffalo.....	506 775			573 076	13.1	586 300
Chicago.....	3 575 518	4 743 707	61 673	4 682 034	32.7	4 952 700
Cleveland.....	1 046 049	1 334 439	13 465	1 320 974	27.6	1 385 400
Detroit.....	1 274 185	2 129 904	15 791	2 114 113	67.2	2 174 000
Los Angeles.....		2 474 073	57 683	2 416 390	114.7	2 485 000
Milwaukee.....	539 449	725 263	7 114	718 149	34.4	761 800
Minneapolis.....	399 698	499 509	None	499 509	25.0	516 000
New York						10 275 400
Philadelphia.....						2 674 100
Pittsburgh.....	1 185 808	1 374 310	11 740	1 362 570	15.9	1 400 800
St. Louis.....	1 061 610	1 267 309	18 218	1 258 091	20.2	1 303 100
San Francisco.....						645 700

^aData are from 1930 U. S. Census (Vol. 1, Agriculture; and Vol. 6, Population). According to estimates of the U. S. Bureau of the Census, the population of the United States increased only 44.2 percent as rapidly during the latter part of the decade 1920-1930 as it did for the decade as a whole. Hence population data since 1930 have been interpolated on a basis of 44.2 percent of the average annual increase in the respective sales areas from 1920 to 1930.

^bThe sales areas of the various cities listed here are as follows:

Baltimore. Includes Harford, Baltimore, Howard, Anne, Arundel (less villages of Churchton and Fair Haven), Carroll (less villages of Union Mills, Taneytown, Keymar, Union Bridge, Uniontown, Newton, Marlboro, and Forestville).

Boston. *Market Administration.* Includes the towns of Marblehead, Swampscott, Saugus, and Nahant in Essex county; Wakefield, Reading, Winchester, Stoneham, Lexington, Arlington, Belmont, and Watertown in Middlesex county; Brookline, Wellesley, Needham, Dedham, Milton, Braintree, and Weymouth in Norfolk county; Wintthrop in Suffolk county; and the cities of Beverly, Boston, Cambridge, Chelsea, Everett, Lynn, Malden, Medford, Melrose, Newton, Peabody, Quincy, Revere, Salem, Somerville, Waltham, and Woburn. *U. S. Bureau of Agricultural Economics* (nonfarm 1934 population) is explained in Ill. Agr. Exp. Sta. Bul. 397, Table 26, p. 447. Population as interpolated for 1934 is explained in footnote a above.

Buffalo. Based on milk sales area as determined by Herbert W. Mumford, Jr., Cornell University, Ithaca, N. Y., unpublished data.

Chicago. The Chicago milk sales area includes the counties of Lake, Cook, DuPage, Will (less the villages of Torino, Custer Park, and Braidwood), Kane (less the village of Burlington), and Kendall (less the cities or villages of Plano, Millington, Newark, and Lisbon)—all in Illinois; Lake and Porter counties in Indiana; and the cities and villages of McHenry, Ridgefield, Crystal Lake, Algonquin, Huntley, Minooka, Manteno, Grant Park, Solitt, Delmar, and Momence in Illinois, as well as the cities and villages of Michigan City, Otis, and Westville in Indiana.

Cleveland. The Cleveland milk sales area includes Cuyahoga county; the townships of Willoughby, Kirtland, Mentor, Painesville and Concord in Lake county; Chester, Russell, and Bainbridge in Geauga county; Twinsburg and Northfield in Summit county; Columbia, Eaton, Carlisle, Ridgeville, Elyria, Amherst, Avon, Sheffield, and Black River in Lorain county—all in the state of Ohio.

Detroit. The Detroit milk sales area includes Wayne county (less Sumpter and Huron townships); the townships of Highland, White Lake, Water Ford, Pontiac, Troy, Bloomfield, West Bloomfield, Commerce, Novi, Farmington, Southfield, and Royal Oak in Oakland county; Warren, Erin, Clinton, Macomb, Harrison, and Chesterfield in Macomb county; Ira, Clay, and Cottleville in St. Clair county; the cities of Pontiac, Royal Oak, Farmington, Ferndale, Pleasant Ridge City, East Detroit City, Mt. Clemens, and Marine City—all in Michigan. Population for Detroit was interpolated at 44.2 percent of the average annual increase in the United States during 1920-1930.

Los Angeles. The Los Angeles milk sales area includes the counties of Los Angeles and Orange; the cities and villages of Ontano, Chino, Cajon, Rialto, San Bernardino, Colton, Highland, Redlands, Pine Knot, Summit, Victorville, Oro Grande, Lucerne Valley, Barstow, Daggett, and Ludlow in San Bernardino county; and the cities and villages of Corona, Arlington, Riverside, Pervis, Elsinore, Temscola, Lakeview, San Jacinto, Hermit, Beaumont, Banning, Indio, Coachella, and Thermal in Riverside county. Population for Los Angeles was interpolated at 44.2 percent of the average annual increase in the United States during 1920-1930.

Milwaukee. The Milwaukee milk sales area consists of Milwaukee county, Wisconsin.

Minneapolis. The Minneapolis milk sales area consists of the cities and villages of Brooklyn Center, Columbia Heights, Crystal, Deep Haven, Edina, Excelsior, Golden Valley, Hopkins, Island Park, Long Lake, Minneapolis, Minnetonka Beach, Morning Side, Mound, Osseo, Richfield, Robbins Dale, St. Louis Park, Tonka Bay, and Wayzata, in the state of Minnesota.

New York. See Ill. Agr. Exp. Sta. Bul. 397, Table 25, p. 447.

Philadelphia. See Ill. Agr. Exp. Sta. Bul. 397, Table 25, p. 447.

Pittsburgh. The Pittsburgh milk sales area consists of Allegheny county, Pennsylvania.

St. Louis. The St. Louis milk sales area is composed of the following governmental units in the state of Missouri: the city of St. Louis; the townships of Carondelet, St. Ferdinand, and Central of St. Louis county and St. Charles in St. Charles county. In the state of Illinois the area is composed of the cities of Alton, Belleville, East St. Louis; the townships of Godfrey, Wood River, Chouteau, Venice, Nameoki, and Collinsville in Madison county, and Canteen, Caseyville, Centerville, St. Clair, Sugar Loaf, Stookey, Millstadt, and O'Fallon in St. Clair county.

TABLE 20.—AVERAGE FAMILY INCOMES AND PER-CAPITA CONSUMPTION OF MILK BY CENSUS DISTRICTS, ST. LOUIS, 1934*

District	Total families	Number of families with incomes of—			Percentages of families with incomes of—			Weighted average income ^b	Daily per-capita consumption of milk ^c
		Under \$1230	\$1230 to \$2049	\$2050 and over	Under \$1230	\$1230 to \$2049	\$2050 and over		
1.....	7 176	2 642	1 906	2 628	36.8	26.6	36.6	\$2 075	.42
2.....	4 221	353	1 266	2 602	8.4	30.0	61.6	2 815	.52
3.....	3 712	777	1 124	1 811	20.9	30.3	48.8	2 452	.52
4.....	3 551	902	1 114	1 535	25.4	31.4	43.2	2 302	.45
5.....	9 631	577	1 113	7 941	6.0	11.6	82.4	3 255	.53
6.....	15 046	1 898	7 297	5 851	12.6	48.5	38.9	2 320	.48
7.....	8 381	1 351	3 386	3 644	16.1	40.4	43.5	2 384	.41
8.....	2 155	863	586	706	40.0	27.2	32.8	1 970	.42
9.....	6 519	2 548	2 142	1 829	39.1	32.8	28.1	1 863	.41
10.....	10 473	2 226	4 509	3 738	21.2	43.1	35.7	2 184	.41
11.....	12 905	5 210	5 202	2 493	40.4	40.3	19.3	1 696	.28
12.....	8 198	769	1 591	5 838	9.4	19.4	71.2	3 000	.48
13.....	2 680	1 184	911	585	44.2	34.0	21.8	1 715	.41
14.....	3 500	220	973	2 307	6.3	27.8	65.9	2 918	.56
15.....	11 987	2 109	4 865	5 013	17.6	40.6	41.8	2 338	.49
16.....	11 074	1 062	4 484	5 528	9.6	40.5	49.9	2 568	.56
17.....	10 139	978	4 025	5 136	9.6	39.7	50.7	2 582	.48
18.....	8 059	4 246	2 665	1 148	52.7	33.1	14.2	1 492	.40
19.....	6 760	1 112	1 379	4 269	16.4	20.4	63.2	2 779	.54
20.....	6 946	4 682	1 562	702	67.4	22.5	10.1	1 287	.38
21.....	10 593	7 165	2 240	1 188	67.6	21.4	11.0	1 307	.19
22.....	7 771	6 059	1 126	586	78.0	14.5	7.5	1 148	.39
23.....	16 872	10 821	3 662	2 389	64.1	21.7	14.2	1 396	.36
24.....	10 730	5 108	3 577	2 045	47.6	33.3	19.1	1 631	.40
25.....	5 480	4 894	322	264	89.3	5.9	4.8	999	.24
26.....	10 296	8 144	1 391	761	79.1	13.5	7.4	1 136	.38
Total.....	214 855	77 900	64 418	72 537	36.3	30.0	33.7	\$2 022	.423

*Determined from a pamphlet published by the research department of the St. Louis *Globe-Democrat* entitled "Metropolitan St. Louis Population and Families Divided by Income Groups for Census Tracts," based on the 1930 U. S. Census.

^bTo obtain the weighted average income for each district the average income for each income-group was multiplied by the number of families in each income-group.

^cFrom unpublished data of a study made under the direction of Mrs. M. C. Harrington, of the St. Louis District Dairy Council, in cooperation with the St. Louis Department of Public Health. The average per-capita consumption of milk for the 8,136 families included in this study was .48 pint daily, compared with .423 pint daily for the market (Table 1). Consumers' statements were corrected for exaggeration by multiplying the reported consumption for each district by $\frac{.423}{.480}$, or 88.1 percent.

TABLE 21.—RACIAL POPULATION ANALYSIS BY CENSUS DISTRICTS, ST. LOUIS, 1930

Census district	Total population ^a	Area in square miles ^b	Population per square mile	White ^a	Negro ^a	Total white and Negro ^c	Percent white is of total
			(thousands)				
1.....	26 814	3.3	8.1	26 117	680	26 797	97.5
2.....	15 139	1.5	10.1	15 137	2	15 139	100.0
3.....	14 479	3.0	4.8	14 469	10	14 479	99.9
4.....	13 376	1.6	8.4	13 281	83	13 364	99.4
5.....	35 712	1.8	19.8	35 247	424	35 671	98.8
6.....	58 588	2.8	20.9	58 306	271	58 577	99.5
7.....	31 923	3.0	10.6	31 908	13	31 921	100.0
8.....	8 387	2.7	3.1	8 209	162	8 371	98.1
9.....	23 576	2.1	11.2	23 193	317	23 510	98.7
10.....	38 583	1.6	24.1	37 025	1 540	38 565	96.0
11.....	51 806	1.9	27.3	29 413	22 352	51 765	56.8
12.....	33 425	1.6	20.9	32 899	458	33 357	98.6
13.....	16 014	1.0	16.0	15 419	593	16 012	96.3
14.....	11 670	2.2	5.3	11 661	8	11 669	99.9
15.....	43 543	3.7	11.8	43 251	291	43 542	99.3
16.....	38 766	1.9	20.4	38 707	44	38 751	99.9
17.....	37 473	1.6	23.4	37 365	82	37 447	99.8
18.....	30 546	1.9	16.1	22 936	7 587	30 523	75.1
19.....	27 648	1.1	25.1	25 898	1 597	27 495	94.2
20.....	26 081	.9	29.0	24 648	1 406	26 054	94.6
21.....	44 678	1.4	31.9	11 916	32 655	44 571	26.7
22.....	31 126	1.3	23.9	19 101	11 853	30 954	61.7
23.....	62 137	2.1	29.6	60 729	1 150	61 879	98.1
24.....	37 400	1.5	24.9	37 373	22	37 395	99.9
25.....	24 275	1.4	17.3	15 027	8 722	23 999	62.6
26.....	38 795	1.8	21.6	37 644	1 008	38 652	97.4
Total.....	821 960	50.7	16.3	726 879	93 580	820 459	88.6

^aFrom U. S. Census, 1930.

^bApproximately 10.3 square miles of nonpopulated areas were subtracted from the total area of St. Louis.

^cThe population of other races numbering 1,501 individuals was not included in the totals by Census districts.

TABLE 22.—INDEXES OF AVERAGE RETAIL PRICES OF ALL FOODS IN ST. LOUIS BY MONTHS, 1925-1934^a
(Same month, 1925-1927 = 100)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1925.....	96	96	98	97	96	97	102	102	101	101	103	102	99
1926.....	103	104	103	104	104	102	100	99	101	101	101	101	102
1927.....	100	102	99	99	102	101	98	99	98	98	96	97	99
1928.....	97	97	97	98	98	96	97	99	99	97	96	97	97
1929.....	98	99	99	98	100	99	103	104	103	100	99	98	100
1930.....	99	100	99	100	97	93	90	93	93	90	87	84	94
1931.....	83	82	82	80	78	75	77	78	75	74	71	70	77
1932.....	68	68	67	66	64	62	63	64	63	61	61	60	64
1933.....	58	57	58	58	60	62	68	71	69	66	65	64	63
1934.....	66	70	70	70	68	69	70	73	76	73	72	72	71

^aTabulated from current reports of the U. S. Bureau of Labor Statistics.

TABLE 23.—AVERAGE RETAIL PRICES OF EVAPORATED MILK IN ST. LOUIS, BY MONTHS, 1925-1934^a

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
(Cents per 14½-ounce can)													
1925-1927.....	9.37	9.37	9.30	9.40	9.50	9.50	9.63	9.63	9.57	9.60	9.67	9.63	9.51
1925.....	9.1	9.2	9.2	9.2	9.2	9.3	9.5	9.6	9.5	9.6	9.7	9.7	9.40
1926.....	9.6	9.5	9.4	9.5	9.4	9.4	9.4	9.4	9.3	9.3	9.4	9.3	9.41
1927.....	9.4	9.4	9.3	9.5	9.9	9.8	10.0	9.9	9.9	9.9	9.9	9.9	9.73
1928.....	9.8	9.6	9.6	9.0	9.0	9.0	9.0	9.3	9.6	9.8	9.8	9.8	9.44
1929.....	9.9	9.8	9.8	9.2	9.0	9.0	9.0	8.8	8.8	8.7	9.1	9.1	9.18
1930.....	8.8	8.8	8.7	8.7	8.7	8.7	8.7	8.7	9.2	9.2	8.7	8.6	8.79
1931.....	9.1	9.0	8.2	8.1	8.1	8.1	8.3	7.5	7.5	7.6	7.5	7.2	8.02
1932.....	7.2	7.1	6.8	6.8	6.6	6.2	5.5	5.3	5.3	5.2	5.3	6.2	6.13
1933.....	6.2	6.2	5.1	5.1	6.3	6.4	6.7	6.8	6.5	6.4	6.5	6.5	6.23
1934.....	6.5	6.5	6.5	6.5	6.5	6.4	6.4	6.4	6.4	6.3	6.3	6.4	6.42
(Indexes: same month 1925-1927 = 100)													
1925.....	97	98	99	98	97	98	99	100	99	100	100	101	99
1926.....	102	101	101	101	99	99	98	98	97	97	97	97	99
1927.....	100	100	100	101	104	103	104	103	103	103	102	103	102
1928.....	105	102	103	96	95	95	94	97	100	102	101	102	99
1929.....	106	105	105	98	95	95	94	91	92	91	94	94	97
1930.....	94	94	94	93	92	92	90	90	96	96	90	89	92
1931.....	97	96	88	86	85	85	86	78	78	79	78	75	84
1932.....	77	76	73	72	70	65	57	55	55	54	55	64	64
1933.....	66	66	55	54	66	67	70	71	68	67	67	68	65
1934.....	69	69	70	69	68	67	67	67	67	66	65	66	68

^aFrom current reports of U. S. Bureau of Labor Statistics. Prices from January, 1925, to December, 1931, were converted from a 16-ounce can to a 14½-ounce can by multiplying by .90625.

TABLE 24.—DIFFERENCES BETWEEN THE RETAIL PRICES PER QUART OF WHOLE MILK AND PER 14½-OUNCE CAN OF EVAPORATED MILK, ST. LOUIS, BY MONTHS, 1925-1934

(Cents per unit)													
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1925.....	3.9	3.8	3.8	3.8	3.8	3.7	3.5	3.4	3.5	3.4	3.3	3.3	3.6
1926.....	3.4	3.5	3.6	3.5	3.6	3.6	3.6	3.6	3.7	3.7	3.6	3.7	3.6
1927.....	3.6	3.6	3.7	3.5	3.1	3.2	3.0	3.1	3.1	3.1	3.1	3.1	3.3
1928.....	3.2	3.4	3.4	4.0	4.0	4.0	4.0	3.7	3.4	3.2	3.2	3.2	3.6
1929.....	3.1	3.2	3.2	3.8	4.0	4.0	4.0	4.2	4.2	4.3	3.9	3.9	3.8
1930.....	4.2	4.2	4.3	4.3	4.3	4.3	4.3	4.3	3.8	3.8	4.3	4.4	4.1
1931.....	2.9	3.0	3.8	3.9	3.9	3.9	3.7	4.5	3.5	3.4	3.5	3.8	3.6
1932.....	3.8	3.9	3.2	3.2	3.4	3.8	4.5	4.7	4.7	4.8	4.7	3.8	4.0
1933.....	3.8	3.8	4.9	4.9	3.7	3.6	3.3	3.2	3.5	3.6	3.5	4.5	3.9
1934.....	4.5	4.5	4.5	4.5	4.5	4.6	4.6	4.6	4.6	4.7	4.7	4.6	4.6

TABLE 25.—AVERAGE FARM PRICES OF TWELVE FARM COMMODITIES IN THE ILLINOIS PART OF THE ST. LOUIS MILKSHED, BY MONTHS, 1925-1934*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
BEEF CATTLE													
<i>(Dollars per 100 pounds)</i>													
1925-1929.....	7.73	7.87	8.04	8.07	8.38	8.28	8.47	8.84	8.37	8.48	8.42	8.45	8.28
1925.....	6.02	6.76	7.65	7.22	7.32	7.74	7.62	9.18	7.44	6.91	7.29	7.12	7.36
1926.....	7.20	7.36	6.92	6.68	7.47	7.34	7.18	7.25	6.88	7.08	6.94	7.02	7.11
1927.....	6.83	7.10	7.09	7.65	7.34	7.30	7.23	7.88	7.51	8.27	8.66	9.42	7.69
1928.....	8.85	8.84	8.96	8.84	9.40	9.14	9.75	9.70	10.52	10.14	9.86	9.48	9.46
1929.....	9.76	9.29	9.58	9.94	10.38	9.89	10.58	10.22	9.52	10.00	9.36	9.20	9.81
1930.....	9.26	9.42	9.47	9.30	9.06	8.90	8.08	6.70	7.72	8.00	7.57	7.40	8.41
1931.....	7.04	6.26	6.74	6.42	6.03	5.95	5.58	5.45	5.80	5.66	5.45	5.20	5.96
1932.....	4.74	4.42	4.58	4.62	4.46	4.42	5.53	5.10	5.04	4.76	4.38	4.18	4.69
1933.....	3.96	3.79	3.70	3.86	4.51	4.17	4.62	4.18	4.24	4.16	3.90	3.47	4.05
1934.....	3.58	4.08	4.28	4.18	4.56	4.90	4.74	4.68	5.18	4.83	5.05	4.86	4.58
<i>(Indexes: same month 1925-1929 = 100)</i>													
1925.....	78	86	95	89	87	93	90	104	89	81	87	84	89
1926.....	93	94	86	83	89	89	85	82	82	83	82	83	86
1927.....	88	90	88	95	88	88	85	89	90	98	103	111	93
1928.....	114	112	111	110	112	110	115	110	126	120	117	112	114
1929.....	126	118	119	123	124	119	125	116	114	118	111	109	118
1930.....	120	120	118	115	108	107	95	76	92	94	90	88	102
1931.....	91	80	84	80	72	72	66	62	69	67	65	62	72
1932.....	61	56	57	57	53	53	65	58	60	56	52	49	57
1933.....	51	48	46	48	54	50	55	47	51	49	46	41	49
1934.....	46	52	53	52	54	59	56	53	62	57	60	58	55
BUTTERFAT													
1925-1929.....	43	41.2	43	41.2	39.8	38.7	38.4	39.4	40.6	42.4	42.8	43.6	41.2
<i>(Cents per pound)</i>													
1925.....	38	34	40	38	36	36	37	38	39	44	43	44	39
1926.....	43	40	41	38	37	38	36	36	39	39	42	44	40
1927.....	43	44	44	44	42	37	37	36	39	41	44	44	41
1928.....	46	44	43	42	42	40	40	41	44	44	44	46	43
1929.....	45	44	47	44	42	42	42	46	42	44	41	40	43
1930.....	35	33	32	34	33	30	30	34	37	34	33	28	33
1931.....	25	23	27	26	19	20	20	23	24	29	27	25	24
1932.....	21	19	19	16	15	13	14	17	16	17	17	20	17
1933.....	18	16	14	15	19	18	22	16	17	18	18	16	17
1934.....	14	22	22	20	20	22	20	24	22	21	25	25	21
<i>(Indexes: same month 1925-1929 = 100)</i>													
1925.....	88	82	93	92	90	93	96	96	96	104	100	101	80
1926.....	100	97	95	92	93	98	94	91	96	92	98	101	97
1927.....	100	107	102	107	106	96	96	91	96	97	103	101	99
1928.....	107	107	100	102	106	103	104	104	108	104	103	106	104
1929.....	105	107	109	107	106	108	109	117	103	104	96	92	104
1930.....	81	80	74	82	83	78	78	86	91	80	77	64	80
1931.....	58	56	63	63	48	52	52	58	59	68	63	57	58
1932.....	49	46	44	39	38	34	36	43	39	40	40	46	41
1933.....	42	39	33	36	48	47	57	41	42	42	42	37	41
1934.....	33	53	51	48	50	57	52	61	54	50	58	57	51

*For Illinois districts South-Southwest and Southwest, as obtained from Illinois State Department of Agriculture.

TABLE 25.—FARM PRICES—Continued

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
CHICKENS													
<i>(Cents per pound)</i>													
1925-1929.....	20.2	21.4	21.2	23	23	21.2	22.4	21.2	21.2	20	19.4	19.4	21.13
1925.....	18	20	20	22	21	20	21	20	21	19	19	20	20
1926.....	21	22	22	24	24	24	24	22	21	20	19	19	22
1927.....	20	22	22	22	25	18	22	18	19	19	19	19	20
1928.....	19	20	19	22	21	20	21	22	23	21	21	21	21
1929.....	23	23	23	25	24	24	24	24	22	21	19	18	22
1930.....	19	20	20	21	18	18	16	16	18	16	15	14	18
1931.....	15	14	16	16	14	16	14	16	16	13	13	13	15
1932.....	13	12	12	12	11	10	10	11	10	09	09	08	11
1933.....	08	09	08	09	09	08	09	09	08	08	07	06	08
1934.....	08	09	10	10	10	10	11	11	12	10	10	10	10
<i>(Indexes: same month 1925-1929 = 100)</i>													
1925.....	89	93	94	95	91	94	94	94	99	95	98	103	95
1926.....	104	103	104	104	104	113	107	104	99	100	98	98	104
1927.....	99	103	104	95	108	84	98	84	90	95	98	98	95
1928.....	94	93	90	95	91	94	94	104	108	105	105	105	100
1929.....	114	107	108	108	104	113	107	113	104	105	98	92	104
1930.....	94	93	94	91	78	84	71	75	84	80	77	72	85
1931.....	74	65	75	70	60	75	62	75	75	65	67	67	71
1932.....	64	56	56	52	48	47	44	52	47	45	46	41	52
1933.....	40	42	38	39	39	38	40	42	38	40	36	31	38
1934.....	40	42	47	43	43	47	49	52	57	50	52	52	47
EGGS*													
<i>(Cents per dozen)</i>													
1925-1929.....	38.2	30	23	22.8	23.6	23.2	24	25.6	29.8	35.4	38	44.8	29.8
1925.....	49	34	23	24	25	26	26	27	30	35	27	46	31
1926.....	36	26	23	25	25	25	24	25	29	39	43	46	30
1927.....	37	30	20	20	19	16	20	22	28	35	40	44	28
1928.....	38	28	22	23	25	24	24	26	30	32	37	42	29
1929.....	31	32	27	22	24	25	26	28	32	36	43	46	31
1930.....	40	34	20	22	19	18	16	18	23	24	30	26	24
1931.....	22	12	17	15	12	13	13	14	16	20	25	24	17
1932.....	14	11	8	8	10	8	9	13	15	21	26	30	14
1933.....	19	9	8	8	10	8	10	10	13	18	22	20	13
1934.....	16	14	13	12	12	12	11	14	20	20	26	26	16
<i>(Indexes: same month 1925-1929 = 100)</i>													
1925.....	128	113	100	105	106	112	108	105	101	99	71	103	104
1926.....	94	87	100	110	105	108	100	98	97	110	113	103	101
1927.....	97	100	87	88	81	69	83	86	94	99	105	98	94
1928.....	99	93	96	101	106	103	100	102	101	90	97	94	97
1929.....	81	107	117	96	102	108	108	109	107	102	113	103	104
1930.....	105	113	87	96	81	78	67	70	77	68	79	58	81
1931.....	58	40	74	66	51	56	54	55	54	56	66	54	57
1932.....	37	37	35	35	42	34	38	51	50	59	68	67	47
1933.....	50	30	35	35	42	34	42	39	44	51	58	45	44
1934.....	42	47	56	53	51	52	46	55	67	56	68	58	54

*For Illinois districts South-Southwest and Southwest, as obtained from the Illinois State Department of Agriculture.

TABLE 25.—FARM PRICES—Continued

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
CORN*													
<i>(Cents per bushel)</i>													
1925-1929.....	75.4	78.0	79.2	79.9	84.8	89.6	89.9	92.4	90.4	81.9	69.1	66.8	81.5
1925.....	108	107.5	107.5	97.5	107.5	108.5	99.5	100.5	92	72.5	63.5	62	93.9
1926.....	63.5	63	59.5	60	61.5	62	64	73.5	71	71	59.5	56	63.7
1927.....	56	58	57.5	58	65	86.5	90.5	95	96.5	87.5	76	73	75.0
1928.....	72	75.5	84	94	104.5	103.5	103.5	98	96.5	86.5	69.5	72.5	88.3
1929.....	77.5	86	87.5	90	85.5	87.5	92	95	96	92	77	70.5	86.4
1930.....	70	68.5	67	72	71.5	73	71.5	86	89	77.5	64.5	63.5	72.8
1931.....	60	60	57	55.5	55	53	53	49.5	38	28.5	30	27	47.2
1932.....	26.5	25	24.5	23	22.5	22.5	22	23	22	17.5	15.5	15	21.6
1933.....	15.5	16	16	24.5	36	38.5	52.5	48.5	45.5	37	39	40.5	34.1
1934.....	42	45	44.5	45.5	45.5	51.5	55	70	77	76	75.5	91.5	59.9
<i>(Indexes: same month 1925-1929 = 100)</i>													
1925.....	143	138	136	122	127	121	111	109	102	88	92	93	125
1926.....	84	81	75	75	73	69	71	80	78	87	86	84	78
1927.....	74	74	73	73	77	96	101	103	107	107	110	109	93
1928.....	95	97	106	118	123	116	115	106	107	106	101	108	108
1929.....	103	110	110	113	101	98	102	103	106	112	111	106	106
1930.....	93	88	85	90	84	81	80	93	98	95	93	95	89
1931.....	80	77	72	69	65	59	59	54	42	35	43	40	58
1932.....	35	32	31	29	26	25	24	25	24	21	22	22	26
1933.....	21	20	20	31	42	43	58	52	50	45	56	61	42
1934.....	56	58	56	57	54	57	61	76	85	93	109	137	73
HOGS													
<i>(Dollars per 100 pounds)</i>													
1925-1929.....	9.65	10.14	10.77	10.58	10.54	10.41	11.13	11.37	11.54	10.95	9.87	9.43	10.53
1925.....	9.56	9.88	12.50	11.96	10.96	11.02	12.58	12.94	12.28	11.62	10.85	10.68	11.40
1926.....	11.28	12.39	12.12	11.98	12.54	13.38	13.34	12.40	13.00	12.69	11.74	11.42	12.36
1927.....	11.12	11.53	11.22	10.67	9.67	8.34	8.93	9.89	10.37	10.73	9.39	8.19	10.00
1928.....	8.04	7.69	7.56	7.89	9.21	9.15	10.02	10.57	11.92	10.17	8.59	8.17	9.08
1929.....	8.26	9.20	10.44	10.39	10.34	10.18	10.76	11.05	10.12	9.54	8.76	8.70	9.81
1930.....	9.07	9.81	10.10	9.70	9.39	9.52	8.88	8.90	9.97	9.37	8.65	7.67	9.25
1931.....	7.57	7.29	7.27	7.18	6.69	5.94	6.66	6.83	5.58	4.92	4.52	3.96	6.20
1932.....	3.92	3.56	4.10	3.66	3.02	2.90	4.60	4.26	3.95	3.38	3.19	2.83	3.61
1933.....	2.81	3.08	3.34	3.25	4.27	4.06	4.20	3.91	3.87	4.38	3.72	2.88	3.65
1934.....	3.09	4.11	4.04	3.57	3.16	3.58	4.06	4.94	6.20	5.30	5.30	5.45	4.40
<i>(Indexes: same month 1925-1929 = 100)</i>													
1925.....	99	97	116	113	104	106	113	114	106	106	110	113	108
1926.....	117	122	113	113	119	129	120	109	113	116	119	121	117
1927.....	115	114	104	101	92	80	87	90	98	95	87	87	95
1928.....	83	76	70	75	87	88	90	93	103	93	87	87	86
1929.....	86	91	97	98	98	98	97	97	88	87	89	92	93
1930.....	94	97	94	92	89	91	80	78	86	86	88	81	88
1931.....	78	72	68	68	63	57	60	60	48	45	46	42	59
1932.....	41	35	38	34	29	28	41	37	34	31	32	30	34
1933.....	29	30	31	31	41	39	38	34	34	40	38	31	35
1934.....	32	41	38	34	30	34	36	43	54	48	54	58	42

*For Illinois districts South-Southwest and Southwest, as obtained from Illinois State Department of Agriculture.

TABLE 25.—FARM PRICES—Continued

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
LOOSE ALFALFA HAY*													
<i>(Dollars per ton)</i>													
1925-1929.....	18.18	18.58	18.04	17.98	17.92	17.22	16.57	16.51	16.83	16.52	17.69	17.88	17.49
1925.....	15.80	16.44	14.00	15.00	15.50	15.00	13.25	15.12	16.60	16.00	18.38	19.20	15.86
1926.....	18.48	18.29	19.64	20.38	20.65	20.30	18.80	19.50	19.26	19.18	19.50	20.62	19.55
1927.....	21.86	21.88	21.00	20.00	19.99	18.50	17.40	16.74	16.66	16.47	16.04	15.50	18.50
1928.....	17.22	16.52	16.66	16.25	16.46	16.66	16.98	16.20	16.46	16.41	19.04	18.06	16.91
1929.....	17.52	19.79	18.92	18.28	17.01	15.62	16.44	14.98	15.16	14.54	15.50	16.00	16.65
1930.....	15.88	16.00	15.44	16.03	15.36	15.00	15.50	18.72	19.60	19.41	20.00	20.50	17.29
1931.....	18.88	18.93	18.09	18.44	17.72	12.97	10.58	11.12	10.96	11.16	11.28	11.61	14.31
1932.....	11.78	10.04	10.36	10.37	9.80	8.24	7.04	8.61	6.55	5.90	7.65	6.55	8.57
1933.....	7.55	7.05	6.80	6.55	7.20	6.78	8.65	9.30	10.55	10.95	11.55	11.25	8.68
1934.....	11.50	12.60	12.40	14.00	13.30	13.30	14.40	15.90	17.10	17.25	17.60	19.20	14.88
<i>(Indexes: same month 1925-1929 = 100)</i>													
1925.....	87	88	78	83	86	87	80	92	99	97	104	107	91
1926.....	102	98	109	113	115	118	113	118	114	116	110	115	112
1927.....	120	118	116	111	112	107	105	101	99	100	91	87	106
1928.....	95	89	92	90	92	97	102	98	98	99	108	101	97
1929.....	96	106	105	102	95	91	99	91	90	88	88	89	95
1930.....	87	86	86	89	86	87	94	113	116	117	113	115	99
1931.....	104	102	100	103	99	75	64	67	65	68	64	65	82
1932.....	65	54	57	58	55	48	42	52	39	36	43	37	49
1933.....	42	38	38	36	40	39	52	56	63	66	65	63	50
1934.....	63	68	69	78	74	77	87	96	102	104	99	107	85
MILK COWS													
<i>(Dollars per head)</i>													
1925-1929.....	72.86	74.33	76.58	74.77	75.58	76.79	75.63	76.76	78.72	81.41	81.87	79.90	77.10
1925.....	58.89	59.25	67.08	59.56	55.00	62.25	58.00	63.76	60.27	63.58	65.25	61.22	61.18
1926.....	62.41	67.48	65.34	67.77	67.88	64.72	70.16	63.64	66.82	66.98	66.11	65.76	66.26
1927.....	65.99	68.44	68.50	69.00	70.00	68.50	68.00	70.50	74.00	79.00	82.50	82.50	72.24
1928.....	81.50	81.50	82.50	83.00	86.00	93.00	86.50	90.50	91.00	94.50	93.00	92.50	87.96
1929.....	95.50	95.00	99.50	94.50	99.00	95.50	95.50	95.50	101.50	103.00	102.50	97.50	97.88
1930.....	88.50	91.50	78.50	82.00	74.50	70.50	71.50	56.00	65.50	69.50	65.00	64.50	73.12
1931.....	54.50	50.50	51.50	44.50	50.00	48.50	46.00	44.94	43.53	42.78	45.00	44.24	47.16
1932.....	42.28	35.44	40.03	37.60	36.64	35.38	33.64	36.09	31.30	36.50	33.25	30.50	35.72
1933.....	32.75	31.15	31.75	32.05	35.10	35.60	36.25	34.05	33.60	31.20	29.70	29.60	32.73
1934.....	29.50	32.15	31.60	31.95	31.90	29.50	28.80	31.10	33.40	34.85	33.15	32.05	31.66
<i>(Indexes: same month 1925-1929 = 100)</i>													
1925.....	81	80	87	80	73	81	77	83	77	78	80	77	79
1926.....	86	91	85	91	90	84	93	85	82	81	82	86	86
1927.....	90	92	89	92	93	89	90	92	94	97	101	103	94
1928.....	112	110	108	111	114	121	114	118	116	116	114	116	114
1929.....	131	128	130	126	131	124	126	124	129	127	125	122	127
1930.....	122	123	102	110	99	92	95	73	83	85	79	81	95
1931.....	74	68	67	60	66	63	61	59	55	53	55	55	61
1932.....	58	48	52	50	48	46	44	47	40	44	41	38	46
1933.....	44	42	41	43	46	46	48	44	43	38	36	37	42
1934.....	40	43	40	43	42	38	38	41	42	43	40	40	41

*For Illinois districts South-Southwest and Southwest, as obtained from the Illinois State Department of Agriculture.

TABLE 25.—FARM PRICES—Continued

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
OATS*													
<i>(Cents per bushel)</i>													
1925-1929.....	48.2	50.0	50.7	49.9	48.0	49.0	45.8	40.3	40.8	43.1	42.4	44.7	46.1
1925.....	59	58.5	58.5	51	45.5	49	45	41	39	40	38	41.5	47.1
1926.....	42.5	44	42.5	43.5	41.5	41.5	39	37.5	38	40	40.5	42	41.0
1927.....	43	43.5	45.5	45	45	46.5	47.5	45	46	48	48	49.5	46.0
1928.....	51	56	60	62	62	65	53	35	36	40.5	41	44.5	50.5
1929.....	45.5	48	47	48	46	43	44.5	43	45	47	44.5	46	45.6
1930.....	43	44.5	45	46	43.5	42	34	37	40.5	39.5	36.5	36	40.6
1931.....	35	35.5	35	35.5	33	30	19	16.5	18	17.5	21.3	20.5	26.4
1932.....	20	19.5	19.5	19.5	18.5	17.5	15	13.5	12.5	12	11.5	12	15.9
1933.....	12.5	12.5	13	16	21.5	24	38.5	32	32	30.5	31.5	33	24.8
1934.....	33.5	38	36	36	34	38.5	39	44	49	50	50	55	41.9
<i>(Indexes: same month 1925-1929 = 100)</i>													
1925.....	122	117	115	102	95	100	98	102	96	93	90	93	102
1926.....	88	88	84	87	86	85	85	93	93	93	96	94	89
1927.....	89	87	90	90	94	95	104	112	113	111	113	111	100
1928.....	106	112	118	124	129	133	116	87	88	94	97	100	110
1929.....	94	96	93	96	96	88	97	107	110	109	105	103	99
1930.....	89	89	89	92	91	86	74	92	99	92	86	81	88
1931.....	73	71	69	71	69	61	41	41	44	41	50	46	57
1932.....	41	39	38	39	39	36	33	33	31	28	27	27	34
1933.....	26	25	26	32	45	49	84	79	78	71	74	74	54
1934.....	70	76	71	72	71	79	85	109	120	116	118	123	91
SOYBEANS													
<i>(Dollars per bushel)</i>													
1925-1929.....	1.91	1.91	2.10	2.11	2.22	2.36	2.39	2.29	1.78	1.52	1.55	1.66	1.98
1925.....	2.00	2.14	2.18	2.25	2.32	2.60	2.38	2.01	1.78	1.40	1.38	1.75	2.02
1926.....	2.44	1.86	2.51	2.22	2.42	3.01	2.63	3.21	2.57	1.62	1.67	1.84	2.33
1927.....	1.85	2.09	2.10	2.14	2.19	2.21	2.22	2.11	1.27	1.72	1.63	1.52	1.92
1928.....	1.56	1.58	1.67	1.86	1.96	1.57	2.12	2.02	1.48	1.32	1.40	1.48	1.67
1929.....	1.72	1.86	2.06	2.08	2.23	2.41	2.62	2.08	1.79	1.52	1.66	1.70	1.98
1930.....	1.68	1.80	1.90	2.02	2.03	2.08	1.63	1.49	1.51	1.51	1.49	1.36	1.70
1931.....	1.32	1.38	1.36	1.32	1.36	1.17	1.18	1.00	.57	.40	.36	.40	.98
1932.....	.44	.46	.47	.45	.44	.45	.43	.36	.37	.38	.37	.39	.42
1933.....	.40	.38	.43	.45	.66	.93	.98	.94	.83	.64	.66	.64	.66
1934.....	.80	1.02	.96	1.79	1.13	1.35	1.42	1.16	.83	.82	.82	1.06	1.10
<i>(Indexes: same month 1925-1929 = 100)</i>													
1925.....	105	112	104	106	105	110	100	88	100	92	89	105	104
1926.....	128	97	120	105	109	128	110	140	144	107	108	111	118
1927.....	96	109	100	101	99	94	93	92	71	113	105	92	95
1928.....	82	83	80	88	88	67	88	88	83	87	90	89	83
1929.....	90	97	98	99	100	102	110	90	101	100	107	102	100
1930.....	88	94	90	96	91	88	68	65	85	99	96	82	86
1931.....	69	72	65	63	61	50	49	44	32	26	23	24	49
1932.....	23	24	22	21	20	19	18	16	21	25	24	23	21
1933.....	21	20	20	21	30	39	41	41	47	42	43	39	34
1934.....	42	53	46	85	51	57	59	51	47	54	53	64	56

*For Illinois districts South-Southwest and Southwest, as obtained from Illinois State Department of Agriculture.

TABLE 25.—FARM PRICES—*Concluded*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
VEAL CALVES*													
<i>(Dollars per 100 pounds)</i>													
1925-1929.....	11.95	11.96	12.07	11.39	11.09	11.01	11.21	11.77	12.63	12.64	11.93	11.99	11.80
1925.....	9.68	8.68	10.25	9.54	9.04	8.10	9.53	10.07	10.45	10.72	10.30	10.24	9.71
1926.....	11.51	11.65	11.01	10.39	10.45	11.22	10.70	10.76	11.88	12.46	10.84	10.84	11.14
1927.....	11.54	12.14	12.07	11.57	10.26	10.04	10.28	11.66	12.17	12.41	11.64	12.42	11.52
1928.....	12.41	13.03	12.66	12.00	12.25	12.75	12.44	13.00	14.60	13.82	13.73	13.06	12.98
1929.....	14.62	14.30	14.34	13.46	13.45	12.96	13.10	13.35	14.03	13.80	13.15	13.39	13.66
1930.....	13.22	13.54	12.52	11.54	9.83	10.18	9.83	9.57	10.22	11.12	10.42	8.18	10.85
1931.....	9.98	9.46	8.56	7.78	7.39	7.28	7.20	7.37	7.92	7.61	6.80	6.84	7.84
1932.....	6.69	6.50	6.85	5.42	4.64	4.57	5.31	5.12	5.51	5.55	4.98	4.60	5.48
1933.....	4.68	5.80	5.35	4.64	4.90	4.68	4.74	5.08	5.50	5.50	5.20	4.52	5.05
1934.....	5.03	6.05	5.55	5.25	4.89	4.26	4.34	4.54	5.80	5.85	5.75	5.60	5.24
<i>(Indexes: same month 1925-1929 = 100)</i>													
1925.....	81	73	85	84	82	74	85	86	83	85	86	85	82
1926.....	96	97	91	91	94	102	95	91	94	99	91	90	94
1927.....	96	102	100	102	93	91	92	99	96	98	98	104	98
1928.....	104	109	105	105	110	116	111	110	116	109	115	109	110
1929.....	122	120	119	118	121	118	117	113	111	109	110	112	116
1930.....	111	113	104	101	89	92	88	81	81	88	87	68	92
1931.....	84	79	71	68	67	66	64	63	63	60	57	57	66
1932.....	56	54	56	48	42	42	47	44	44	44	42	38	46
1933.....	39	48	44	41	44	42	42	43	44	44	44	38	41
1934.....	42	51	46	46	44	39	39	39	46	46	48	47	44
WHEAT*													
<i>(Dollars per bushel)</i>													
1925-1929.....	1.46	1.48	1.44	1.40	1.47	1.41	1.31	1.30	1.30	1.31	1.29	1.32	1.37
1925.....	1.82	1.82	1.77	1.60	1.65	1.66	1.42	1.55	1.53	1.48	1.54	1.65	1.62
1926.....	1.72	1.72	1.53	1.50	1.56	1.46	1.29	1.26	1.24	1.28	1.28	1.26	1.42
1927.....	1.26	1.26	1.24	1.18	1.28	1.35	1.34	1.28	1.28	1.29	1.27	1.29	1.28
1928.....	1.28	1.30	1.42	1.52	1.80	1.56	1.41	1.22	1.24	1.28	1.22	1.25	1.38
1929.....	1.24	1.28	1.22	1.18	1.08	1.00	1.10	1.18	1.21	1.20	1.13	1.17	1.16
1930.....	1.19	1.10	1.05	1.04	.98	.98	.76	.80	.82	.75	.73	.70	.91
1931.....	.69	.68	.66	.67	.66	.59	.39	.38	.38	.37	.50	.46	.54
1932.....	.45	.45	.46	.46	.44	.40	.37	.42	.42	.40	.38	.38	.42
1933.....	.40	.39	.42	.52	.71	.66	.94	.82	.76	.72	.80	.77	.66
1934.....	.78	.81	.80	.76	.74	.86	.82	.92	.94	.90	.90	.92	.85
<i>(Indexes: same month 1925-1929 = 100)</i>													
1925.....	125	123	123	114	112	118	108	119	118	113	119	125	118
1926.....	118	116	106	107	106	104	98	97	95	98	99	95	103
1927.....	86	85	86	84	87	96	102	98	98	98	98	98	93
1928.....	88	88	99	109	122	111	108	94	95	98	95	95	100
1929.....	85	86	85	84	73	71	84	91	93	92	88	89	85
1930.....	82	74	73	74	67	70	58	62	63	57	57	53	66
1931.....	47	46	46	48	45	42	30	29	29	28	39	35	39
1932.....	31	30	32	33	30	28	28	32	32	30	29	29	30
1933.....	27	26	29	37	48	47	72	63	58	55	62	58	48
1934.....	53	55	56	54	50	61	63	71	72	69	70	70	62

*For Illinois districts South-Southwest and Southwest, as obtained from Illinois State Department of Agriculture.

TABLE 26.—COST OF A ST. LOUIS DAIRY RATION,^a BY MONTHS, 1925-1934
(Per 1000 pounds)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1925-1929.....	\$14.06	\$14.17	\$14.27	\$14.33	\$14.69	\$14.95	\$14.63	\$14.46	\$14.24	\$13.75	\$13.11	\$13.20	\$14.15
1925.....	16.70	15.90	15.89	15.06	15.70	16.07	15.17	15.43	14.08	12.78	12.34	12.35	14.79
1926.....	12.39	12.04	11.51	11.93	11.75	11.76	11.83	12.24	11.96	11.66	10.98	11.09	11.76
1927.....	11.63	12.12	12.21	12.20	12.98	14.44	14.58	14.75	15.15	14.57	14.38	14.64	13.64
1928.....	14.78	15.55	16.77	17.84	19.21	18.82	16.88	14.91	14.60	14.66	13.99	14.51	16.04
1929.....	14.82	15.26	14.97	14.62	13.82	13.65	14.67	14.96	15.42	15.08	13.82	13.41	14.54
1930.....	13.03	12.66	12.47	13.47	13.22	12.66	11.73	13.52	13.12	11.80	10.73	10.31	12.39
1931.....	9.97	9.84	10.09	10.10	9.18	8.45	7.57	6.84	5.92	5.20	6.16	5.64	7.91
1932.....	5.49	5.31	5.37	5.35	4.95	4.61	4.42	4.84	4.74	4.21	3.95	3.81	4.75
1933.....	3.87	4.02	4.44	5.30	6.55	6.82	10.02	8.92	8.09	7.23	7.68	7.77	6.73
1934.....	8.30	9.08	9.19	9.14	8.76	9.88	10.38	12.61	13.17	13.16	13.67	15.24	11.05

^aComposed of 450 pounds of corn-and-cob meal, 180 pounds of oats, 190 pounds of bran, and 180 pounds of cotton-seed meal. Farm prices as obtained from the Illinois State Department of Agriculture have been used for corn and oats; St. Louis prices as obtained from *Crops and Markets*, U. S. Department of Agriculture, and from the St. Louis Merchants Exchange have been used for bran and cotton-seed meal. This ration was recommended by W. B. Nevens, Department of Dairy Husbandry, University of Illinois.

TABLE 27.—QUANTITIES OF A ST. LOUIS DAIRY RATION THAT 100 POUNDS OF MILK
WOULD BUY, BY MONTHS, 1925-1934
(Pounds)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1925.....	138	145	126	133	111	109	128	126	146	164	178	178	140
1926.....	178	183	187	159	136	144	161	163	167	172	200	212	172
1927.....	206	190	184	164	131	118	123	129	132	144	156	160	153
1928.....	166	148	121	112	88	90	113	127	137	143	161	162	131
1929.....	159	151	147	137	123	124	130	134	130	143	163	172	142
1930.....	165	150	144	134	121	126	154	140	160	170	170	164	150
1931.....	147	148	153	138	138	167	218	234	277	312	244	257	203
1932.....	220	220	182	168	164	182	199	178	188	221	230	228	198
1933.....	214	199	180	160	137	139	116	130	143	160	151	175	159
1934.....	146	145	140	131	132	131	129	113	111	96	104	115	124

TABLE 28.—AVERAGE DAILY PRICES OF 92-SCORE BUTTER AT CHICAGO,
BY MONTHS, 1919-1934^a
(Cents per pound)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1919.....	60	49	60	62	57	51	51	53	57	64	69	68	58.4
1920.....	63	63	66	64	57	55	55	54	57	57	60	51	58.5
1921.....	48	47	47	44	29	32	39	40	42	45	44	43	41.6
1922.....	34	37	38	37	34	36	34	34	39	44	50	53	39.1
1923.....	50	50	49	45	40	39	38	43	46	47	52	53	46.0
1924.....	52	49	46	37	37	39	38	37	37	37	42	42	41.1
1925.....	39	40	48	43	41	42	42	42	46	49	50	47	44.1
1926.....	43	43	42	38	39	39	39	40	43	46	49	53	42.8
1927.....	48	50	49	48	41	40	40	41	45	46	48	51	45.5
1928.....	47	46	48	44	43	43	44	46	47	46	49	49	46.0
1929.....	47	49	48	44	42	42	41	42	45	44	41	39	43.7
1930.....	35.1	35.3	37.2	37.2	33.7	32.1	34.6	38.0	38.2	37.7	33.7	30.5	35.3
1931.....	27.3	27.1	28.7	24.4	22.4	22.3	23.8	27.2	30.3	32.2	29.7	29.1	27.0
1932.....	23.0	21.6	22.0	19.0	17.1	16.3	17.7	19.4	20.0	19.8	22.1	22.7	20.0
1933.....	18.8	17.8	17.6	19.8	21.8	22.4	23.9	20.6	22.7	23.0	22.6	18.6	20.8
1934.....	19.3	24.4	24.5	22.4	23.2	24.2	23.6	26.4	24.8	25.9	29.0	29.5	24.8

^aFrom U. S. D. A. Yearbooks 1919 to 1932, and current copies of *Michigan Milk Messenger*, Jan., 1933, to Jan., 1935.

TABLE 29.—AVERAGE NET PRICES PAID TO PRODUCERS FOR 3.5-PERCENT MILK F.O.B. COUNTRY PLANTS IN A 41-TO-50-MILE ZONE FROM ST. LOUIS, 1909 TO 1934^a

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
<i>(Dollars per 100 pounds)</i>													
1909.....	1.52	1.52	1.47	1.14	.84	.91	1.06	1.20	1.25	1.52	1.56	1.66	1.30
1910.....	1.70	1.68	1.56	1.33	1.07	1.07	1.16	1.26	1.39	1.63	1.72	1.83	1.45
1911.....	1.87	1.82	1.68	1.31	1.01	1.01	1.19	1.32	1.29	1.50	1.59	1.73	1.44
1912.....	1.77	1.74	1.56	1.30	.91	.98	1.11	1.19	1.28	1.47	1.59	1.76	1.39
1913.....	1.76	1.73	1.56	1.36	1.11	1.26	1.31	1.42	1.50	1.69	1.80	1.87	1.53
1914.....	1.90	1.80	1.66	1.35	1.11	1.30	1.39	1.45	1.49	1.64	1.73	1.77	1.55
1915.....	1.76	1.64	1.52	1.34	1.00	1.02	1.16	1.20	1.13	1.24	1.50	1.62	1.34
1916.....	1.65	1.63	1.52	1.48	1.47	1.14	1.15	1.15	1.24	1.34	1.78	1.89	1.45
1917.....	2.04	1.99	1.70	1.70	1.30	1.30	2.10	2.20	2.20	3.20	3.20	3.20	2.18
1918.....	3.20	3.20	3.10	2.65	1.95	1.80	2.24	2.69	2.94	3.30	3.65	3.66	2.86
1919.....	3.56	3.39	3.18	2.78	2.25	2.58	2.97	3.10	3.65	3.66	3.67	3.80	3.22
1920.....	3.67	3.42	3.11	2.98	2.92	2.77	3.25	3.75	3.52	2.76	3.02	3.07	3.19
1921.....	2.70	2.63	2.15	2.21	1.83	1.32	1.63	2.06	1.94	1.94	2.15	1.75	2.02
1922.....	1.74	1.64	1.56	1.40	1.35	1.40	1.80	1.80	1.80	1.95	2.25	2.45	1.76
1923.....	2.50	2.37	2.25	2.15	1.85	1.85	2.00	2.10	2.10	2.25	2.40	2.40	2.18
1924.....	2.45	2.45	2.25	1.95	1.60	1.60	1.80	1.80	1.85	2.00	2.00	2.20	2.00
1925.....	2.30	2.30	2.00	2.00	1.75	1.75	1.95	1.95	2.05	2.10	2.20	2.20	2.05
1926.....	2.20	2.20	2.15	1.90	1.60	1.70	1.90	2.00	2.00	2.00	2.20	2.35	2.02
1927.....	2.40	2.30	2.25	2.00	1.70	1.70	1.80	1.90	2.00	2.10	2.25	2.35	2.06
1928.....	2.45	2.30	2.20	2.00	1.70	1.70	1.90	1.90	2.00	2.10	2.25	2.35	2.07
1929.....	2.35	2.30	2.20	2.00	1.70	1.70	1.90	2.00	2.00	2.15	2.25	2.30	2.07
1930.....	2.15	1.90	1.80	1.80	1.60	1.60	1.80	1.90	2.10	2.00	1.82	1.69	1.85
1931.....	1.47	1.46	1.54	1.39	1.27	1.41	1.65	1.60	1.64	1.62	1.50	1.45	1.50
1932.....	1.21	1.17	.98	.90	.81	.84	.88	.86	.89	.93	.91	.87	.94
1933.....	.83	.80	.80	.85	.90	.95	1.16	1.16	1.16	1.16	1.16	1.36	1.02
1934.....	1.21	1.32	1.29	1.20	1.16	1.29	1.34	1.43	1.46	1.53	1.54	1.43	1.35
<i>(Indexes: same month 1925-1929 = 100)</i>													
1925.....	98	101	93	101	104	102	103	100	102	100	99	95	100
1926.....	94	96	100	96	95	99	101	103	100	96	99	102	99
1927.....	103	101	104	101	101	99	95	97	100	100	101	102	100
1928.....	105	101	102	101	101	99	101	97	100	100	101	102	101
1929.....	100	101	102	101	101	99	101	103	100	103	101	100	101
1930.....	92	83	83	91	95	94	95	97	104	96	82	73	90
1931.....	63	64	71	70	75	82	87	82	82	78	67	63	73
1932.....	52	51	45	45	48	49	47	44	44	44	41	38	46
1933.....	35	35	39	43	53	56	61	59	58	56	52	59	50
1934.....	52	58	60	61	69	75	71	73	73	73	69	62	66

^aThe prices shown for October, 1930, and subsequent months are weighted averages of the prices paid members of the Sanitary Milk Producers for each month that milk was sold on a classified basis. Prices previous to October, 1930, were obtained thru the courtesy of the St. Louis Dairy Company.

An additional 10 cents a hundred pounds of milk was paid from July, 1927, to March, 1930, to those producers who installed certain specified equipment.

The weighted gross average price f.o.b. country plant was calculated from October, 1930, to October, 1934. Classification prices were quoted f.o.b. city from December, 1933, to October, 1934. The transportation differential from the 50-mile zone to St. Louis from December, 1933, to February, 1934, was 15 cents per 100 pounds on each of the three classes of milk. The following transportation differentials were applied in the sale of milk to distributors from March to December, 1934, on 100 pounds of milk:

	Class I cents	Class II cents	Class III cents
<i>City limits to 50-mile zone</i>			
March 1 to May 31, 1934.....	20	10	5
June 1, to August 13, 1934.....	20	20	5
<i>41 to 50-mile zone</i>			
August 14 to December 31, 1934.....	21	21	5

These differentials were applied to the volumes in each classification for each month from March to November 14, 1934, in arriving at a weighted average transportation differential as applied to producers in the country-plant zones. The differentials per 100 pounds of milk for the 50-mile zone and 41-50 mile zone were as follows, in cents: March, 13; April, 12; May, 11; June, 14; July, 14; August, 13; September, 13; October, 15; November, 18; and December, 21. These differentials were subtracted from the weighted average gross price f.o.b. city to obtain the average weighted gross price f.o.b. country plant from November 14, 1934. From November 15, 1934, the transportation differential to producers was 21 cents per 100 pounds on all milk from the 41-50 mile zone to the city limits.

The following check-off was deducted from the average weighted gross price f.o.b. country plants to obtain the average weighted net price per 100 pounds paid to producers:

<i>Sanitary Milk Producers</i>	<i>cents</i>
October, 1930, to February, 1932.....	3
March, 1932, to November, 1932.....	5
December, 1932, to February, 1934.....	4
February to December, 1934.....	3
<i>Milk Industry Board</i>	
November 25, 1933, to February, 1934.....	1
<i>Milk Market Administrator</i>	
March to December, 1934.....	1

TABLE 30.—GROSS PRICES PAID FOR 3.5-PERCENT MILK BY DISTRIBUTORS, F.O.B. COUNTRY PLANTS FROM OCTOBER, 1930, TO NOVEMBER 25, 1933,^a AND F.O.B. CITY PLANTS FROM NOVEMBER 26, 1933, TO OCTOBER, 1934 (Dollars per 100 pounds)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Class I milk												
1930.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.43	2.43	2.43
1931.....	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.03	1.93	1.93	1.93
1932.....	1.81	1.81	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.18	1.04
1933.....	1.09	1.09	1.09	1.09	1.14	1.14	1.20 ^b	1.20 ^b	1.20 ^b	1.20 ^b	1.20 ^b	1.945
1934.....	1.945	1.945	1.85	1.85	1.85	2.00	2.00	2.00 ^d (2.35)	2.35	2.35	2.35 ^e (2.00)	2.00
Class II milk (formerly termed "first surplus")												
1930.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.58	1.42	1.28
1931.....	1.15	1.14	1.20	1.02	.94	.94	1.00	1.14	1.27	1.35	1.25	1.22
1932.....	.97	.91	.93	.80	.72	.68	.74	.76	.76	.76	.93	.95
1933.....	.79	.75	.74	.80	.91	.94	(b)	(b)	(b)	(b)	(b)	1.29
1934.....	1.04	1.265	1.33	1.24	1.28	1.27	1.24	1.33 ^d (1.41)	1.33	1.38	1.50 ^e (1.53)	1.54
Class III milk (formerly termed "second surplus")												
1930.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.32	1.18	1.07
1931.....	.96	.95	1.00	.85	.78	.78	.....	.95	1.06	1.13	1.04	1.02
1932.....	.81	.76	.77	.66	.60	.57	.62	.63	.63	.63	.77	.79
1933.....	.66	.62	.62	.69	.76	.78	(b)	(b)	(b)	(b)	(b)	1.04
1934.....	.84	1.01	1.01	.93	.96	1.00	.98	1.05 ^d (1.08)	1.02	1.06	1.15 ^e (1.18)	1.18

^aPrices from October, 1930, to November 25, 1933, are those paid by distributors contracting with the Sanitary Milk Producers.

^bProducers were paid a flat price from July 1 to November 25, 1933.

^cThe Marketing Agreement under the Agricultural Adjustment Administration became effective November 26, 1933, and from that date prices were quoted f.o.b. city plants, St. Louis.

^dThese prices were in effect from August 1-13, 1934, when a new price series shown in parentheses became effective.

^ePrices in effect November 1-15, 1934, when a new price series, shown in parentheses, became effective.

TABLE 31.—AVERAGE PRICES PAID TO PRODUCERS FOR 3.5-PERCENT MILK AT THE GREENVILLE CONDENSERY, BY MONTHS, 1909 TO 1934^a
(Dollars per 100 pounds)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1909.....	1.70	1.70	1.60	1.35	1.00	1.00	1.15	1.30	1.30	1.55	1.60	1.70	1.41
1910.....	1.75	1.75	1.60	1.40	1.15	1.15	1.25	1.30	1.35	1.75	1.80	1.90	1.51
1911.....	2.00	1.95	1.75	1.40	1.15	1.15	1.25	1.40	1.40	1.60	1.75	1.90	1.56
1912.....	2.00	1.90	1.70	1.45	1.05	1.10	1.20	1.30	1.35	1.55	1.75	1.95	1.52½
1913.....	1.95	1.85	1.70	1.45	1.25	1.40	1.45	1.45	1.45	1.80	1.90	2.00	1.64
1914.....	2.00	2.00	1.80	1.45	1.25	1.40	1.55	1.55	1.70	1.90	1.90	2.00	1.71
1915.....	2.00	2.00	1.80	1.50	1.20	1.20	1.35	1.35	1.40	1.50	1.65	1.80	1.56
1916.....	1.90	1.85	1.70	1.55	1.30	1.35	1.40	1.50	1.50	1.90	2.00	2.25	1.68
1917.....	2.25	2.25	2.25	2.20	2.10	2.15	2.30	2.45	2.75	3.20	3.20	3.20	2.52½
1918.....	3.20	3.07	2.95	2.65	2.00	2.00	2.30	2.75	3.00	3.35	3.68	3.70	2.89
1919.....	3.60	3.35	3.25	2.65	2.50	2.50	3.00	3.52	3.65	3.65	3.70	3.82½	3.27
1920.....	3.70	3.45	3.00	3.00	2.90	2.80	3.25	3.75	3.25	2.65	3.10	2.50	3.11
1921.....	2.25	2.12½	2.12½	2.18	1.80	1.29	1.60	2.08	1.92	1.91	2.19	1.80	1.94
1922.....	1.75	1.65	1.55	1.40	1.35	1.40	1.80	1.80	1.80	1.95	2.25	2.45	1.76
1923.....	2.50	2.30	2.25	2.15	1.85	1.85	2.00	2.10	2.10	2.25	2.40	2.40	2.18
1924.....	2.25	2.25	2.15	1.85	1.60	1.60	1.70	1.70	1.70	1.85	1.92½	2.20	1.90
1925.....	2.20	2.00	2.00	2.00	1.75	1.75	1.95	1.95	2.05	2.10	2.20	2.20	2.01
1926.....	2.20	2.10	2.10	1.90	1.60	1.70	1.90	2.00	2.00	2.00	2.10	2.35	1.99½
1927.....	2.40	2.30	2.25	2.00	1.70	1.70	1.80	1.90	2.00	2.10	2.25	2.35	2.06
1928.....	2.45	2.30	2.20	2.00	1.70	1.70	1.90	2.00	2.10	2.20	2.35	2.45	2.11
1929.....	2.45	2.40	2.30	2.10	1.80	1.80	2.00	2.10	2.10	2.25	2.35	2.35	2.17
1930.....	2.00	1.80	1.75	1.75	1.60	1.60	1.80	1.90	1.90	1.70	1.75	1.60	1.76
1931.....	1.40	1.30	1.25	1.20	1.07½	1.02½	1.00	1.05	1.20	1.27½	1.25	1.20	1.18½
1932.....	1.07½	.97½	.95	.90	.85	.77½	.75 ^b	.75	.80	.80	.80	.85	.86
1933.....	.82½	.75	.75	.80	.87½	.90	1.02½	1.05	1.05	1.06	1.06	1.00	.93
1934.....	1.02½	1.15	1.16	1.04	1.08½	1.14	1.09	1.22	1.15	1.19	....	....	....

^aPrices were obtained thru courtesy of Pet Milk Co., Greenville, Ill.

^bFrom July, 1932, to March, 1934, an additional 10 cents per 100 pounds was paid to each producer having a milk house.

TABLE 32.—DAIRY CATTLE POPULATION AND PRODUCTION OF MILK IN THE ST. LOUIS MILKSHED, JUNE, 1933, TO MAY, 1934^a

Counties	Number of producers returning questionnaires	Average production per cow		Average number of cows per 10 farms			Average number of heifers per 10 farms			
		Annual	Per day ^b	Milk- ing	Dry	Total	Two- year olds	Year- lings	Calves	Total
<i>Illinois</i>										
Madison.....	624	4 883	17.1	71	15	86	9	12	11	32
Clinton.....	489	4 618	16.0	81	19	100	10	12	11	33
St. Clair.....	447	4 235	14.3	58	12	70	7	10	9	26
Randolph.....	409	3 957	14.6	64	16	80	8	11	14	33
Washington.....	391	3 890	15.4	59	14	73	7	9	9	25
Effingham.....	361	3 924	15.1	76	18	94	12	15	13	40
Fayette.....	281	3 486	14.4	63	15	78	9	12	11	32
Montgomery.....	220	4 424	17.0	71	18	89	10	17	13	40
Bond.....	193	4 312	15.2	67	14	81	9	12	11	32
Marion.....	192	3 889	14.6	61	12	73	8	10	9	27
Greene.....	106	3 810	14.3	82	22	104	11	22	20	53
Monroe.....	103	4 809	16.6	53	10	63	7	8	8	23
Macoupin.....	102	5 050	17.3	89	19	108	15	19	15	49
Shelby.....	73	3 766	10.1	78	15	93	9	14	13	36
Moultrie.....	66	3 201	25.8	82	13	95	8	15	24	47
Others.....	64	4 514	12.2	84	16	100	14	14	19	47
Jersey.....	53	4 450	16.9	80	18	98	16	14	12	42
Perry.....	42	3 570	14.4	61	16	77	7	13	12	32
Christian.....	27	3 891	13.8	84	9	93	11	19	16	46
Cumberland.....	24	3 141	14.5	67	22	89	9	19	22	50
Clark.....	14	3 591	15.5	61	21	82	8	11	11	30
Jefferson.....	13	2 656	8.9	84	17	101	13	34	22	69
Average.....	(4 294) ^c	4 290	15.5	69	16	85	9	12	12	33
<i>Missouri</i>										
Franklin.....	305	3 067	13.2	75	21	96	10	13	11	34
Jefferson.....	282	4 028	15.8	94	22	116	14	17	13	44
Lincoln.....	104	4 096	15.8	59	17	76	9	9	7	25
St. Charles.....	83	4 637	14.1	76	15	91	10	14	12	36
Texas.....	49	3 829	15.6	127	21	148	16	20	24	60
St. Louis.....	31	8 016	28.1	119	28	147	16	23	23	62
Others.....	29	3 744	16.6	116	28	144	18	41	30	89
Phelps.....	28	2 826	11.2	77	28	105	7	11	10	28
Wright.....	28	3 852	12.0	141	14	155	19	18	38	75
Audrain.....	27	4 181	17.0	84	21	105	10	14	18	42
Pike.....	25	4 158	18.2	118	28	146	11	35	25	71
Montgomery.....	24	3 257	7.5	83	27	110	9	17	18	44
Howell.....	22	2 621	11.9	129	19	148	16	25	18	59
Marion.....	18	3 219	11.3	209	40	249	41	53	49	143
Gasconade.....	17	2 824	8.7	79	27	106	9	15	16	40
Crawford.....	16	3 951	14.5	99	21	120	19	22	29	70
Osage.....	14	2 323	10.1	97	50	147	12	29	23	64
Warren.....	13	3 602	13.7	62	23	85	4	18	8	30
Average.....	(1 115) ^c	3 793	14.6	90	22	112	12	17	15	44
<i>Illinois and Missouri</i>										
Average.....	(5 409) ^c	4 161	15.3	73	17	90	10	13	12	35

^aBased upon answers to questionnaires by 5,409 producers, June, 1934.^bFor May, 1934. ^cTotal.

TABLE 33.—DAIRY CATTLE ON FARMS IN THE UNITED STATES AND IN ILLINOIS ON JANUARY 1, 1920-1934*

Year	United States		Illinois	
	Milk cows and heifers two years old and older	Dairy heifers one and two years old	Milk cows and heifers two years old and older	Dairy heifers one and two years old
1920.....	21 427 000	4 418 000	1 047 000	.....
1921.....	21 408 000	4 155 000	1 027 000	.....
1922.....	21 788 000	4 023 000	1 125 000	.....
1923.....	22 063 000	4 147 000	1 148 000	179 000
1924.....	22 255 000	4 137 000	1 159 000	196 000
1925.....	22 481 000	4 195 000	1 049 000	187 000
1926.....	22 188 000	3 916 000	1 039 000	167 000
1927.....	21 801 000	4 059 000	988 000	184 000
1928.....	21 828 000	4 201 000	968 000	175 000
1929.....	21 919 000	4 413 000	958 000	186 000
1930.....	22 499 000	4 699 000	1 006 000	208 000
1931.....	23 576 000	4 775 000	1 057 000	234 000
1932.....	24 475 000	4 685 000	1 089 000	215 000
1933.....	25 277 000	4 704 000	1 122 000	219 000
1934.....	26 062 000	4 749 000	1 165 000	209 000

*As reported by the U. S. Department of Agriculture.

TABLE 34.—AVERAGE NUMBER OF DAIRY CATTLE PER 10 FARMS IN THE ST. LOUIS MILKSHED, JUNE, 1934

Number of milking cows	Number of producers	Cows per 10 farms			Heifers per 10 farms			
		Milking	Dry	Total	2-year	Yearlings	Calves	Total
0-4.....	1 300	33	13	46	6	7	6	19
5-8.....	2 643	64	15	79	8	12	11	31
9-12.....	1 004	102	20	122	8	16	16	40
13-16.....	285	142	25	167	18	27	27	72
17-20.....	95	184	32	216	28	35	30	93
21-24.....	37	221	32	253	42	53	42	137
Over 24.....	45	345	54	399	54	74	63	191
Average.....	(5 409)*	73	17	90	10	13	12	35

*Total

TABLE 35.—TOTAL MILK PRODUCTION OF MEMBERS OF SANITARY MILK PRODUCERS, AND OF NONMEMBERS, BY COUNTIES, JUNE, 1933 TO MAY, 1934

Illinois counties	Volume of milk in millions of pounds			Percent of county totals		Missouri counties	Volume of milk in millions of pounds			Percent of county totals	
	Members	Non-members	Total	Members	Non-members		Members	Non-members	Total	Members	Non-members
Madison.....	54.9	20.4	75.3	73	27	Jefferson.....	13.5	6.8	20.3	67	33
Clinton.....	31.9	11.6	43.5	73	27	Franklin.....	11.3	8.6	19.9	57	43
St. Clair.....	21.7	14.9	36.6	59	41	St. Charles.....	4.2	2.0	6.2	68	32
Washington.....	21.8	9.5	31.3	70	30	Lincoln.....	4.2	.9	5.1	83	17
Randolph.....	13.2	9.8	23.0	57	43	Marion.....	.5	4.5	5.0	10	90
Effingham.....	12.4	8.0	20.4	61	39	St. Louis.....	1.3	2.7	4.0	32	68
Bond.....	11.7	4.0	15.7	74	26	Texas.....	.1	3.2	3.3	4	96
Montgomery.....	10.9	4.1	15.0	72	28	Pike.....	1.8	.8	2.6	68	32
Macoupin.....	10.5	3.8	14.3	74	26	Montgomery.....	1.3	.6	1.9	70	30
Fayette.....	9.1	3.5	12.6	72	28	Audrain.....	1.3	.3	1.6	81	19
Marion.....	7.7	1.8	9.5	81	19	Wright.....	(*)	1.5	1.5	2	98
Greene.....	6.1	1.2	7.3	83	17	Crawford.....	.5	.9	1.4	36	64
Monroe.....	2.2	6.5	8.7	25	75	Phelps.....	.1	1.0	1.1	9	91
Jersey.....	4.8	1.2	6.0	81	19	Howell.....	.1	1.1	1.1	..	100
Shelby.....	1.5	2.7	4.2	35	65	Warren.....	.1	.7	.8	16	84
Moultrie.....	.4	3.2	3.6	11	89	Gasconade.....	.6	.2	.8	72	28
Perry.....	.8	1.1	1.9	42	58	Ossage.....	.1	.5	.6	23	78
Clark.....	.6	1.2	1.8	32	68	Cole.....	.5	.5	.8	92	92
Douglas.....	.2	1.6	1.8	11	89	Ralls.....	.4	.4	7	93	93
Coles.....	.3	1.4	1.7	17	83	Maries.....	.2	.2	0	100	100
Cumberland.....	.6	.9	1.5	42	58	Oregon.....	.2	.2	0	100	0
Christian.....	1.0	.4	1.4	71	29	Washington.....	.1	..	.1	100	0
Jackson.....	.1	.3	.4	35	65	Others.....	..	.1	.1	0	100
Piatt.....	(*)	.4	.4	6	94						
Jasper.....	.2	.1	.3	60	40	Missouri totals...	41.0	37.7	78.7	52	48
Jefferson.....	(*)	.2	.2	6	94						
Clay.....	.1	(*)	.1	67	33						
Sangamon.....	.1	(*)	.1	60	40	Grand totals.....	265.8	151.5	417.3	64	36
Illinois totals.....	224.8	113.8	338.6	66	34						

*Less than 100,000 pounds of milk.

TABLE 36.—MONTHLY VARIATION IN AVERAGE DAILY PRODUCTION OF MILK BY MEMBERS OF THE SANITARY MILK PRODUCERS, NONMEMBERS, AND TOTAL FOR THE ST. LOUIS MILKSHED, JUNE, 1933, TO MAY, 1934*

	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
<i>(Average daily production per farm in pounds)</i>													
Members.....	111	101	104	94	91	94	97	102	103	99	112	140	104
Non-members..	108	97	97	87	84	85	86	92	94	92	105	132	97
Total.....	110	100	102	92	89	91	93	98	100	97	110	137	102
<i>(Indexes of average daily production: 12 months' average = 100)</i>													
Members.....	107	97	100	90	88	90	93	98	99	95	108	134	100
Non-members..	112	101	101	90	87	88	89	95	97	95	108	137	100
Total.....	108	98	100	90	88	90	92	97	98	95	108	135	100

*Based upon data for 8,426 producers who shipped milk 10 months or longer.

TABLE 37.—AVERAGE DAILY PRODUCTION PER PRODUCER BY COUNTIES IN THE ST. LOUIS MILKSHED, JUNE, 1933, TO MAY, 1934

Counties	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
<i>Illinois</i>													
Bond.....	108	99	99	87	91	92	89	93	94	89	106	137	99
Christian.....	95	90	87	75	70	71	75	75	74	71	85	115	82
Clark.....	97	70	78	85	84	92	99	100	103	91	90	128	93
Clinton.....	126	112	114	105	108	111	118	125	126	123	137	171	123
Cumberland.....	66	55	50	54	53	66	80	71	77	66	67	90	66
Effingham.....	122	107	111	99	90	93	98	100	100	98	106	143	106
Fayette.....	90	84	85	72	68	68	69	68	66	63	74	101	76
Greene.....	129	115	121	114	104	108	105	107	103	99	113	137	113
Jackson.....	124	106	105	86	77	121	148	142	145	128	118	141	120
Jefferson.....	84	96	76	51	58	70	76	82	84	80	98	128	82
Jersey.....	126	114	114	101	94	107	106	102	100	101	114	124	108
Macoupin.....	164	151	148	140	151	160	165	176	175	170	184	216	167
Madison.....	121	111	114	102	104	110	114	120	119	114	128	160	118
Marion.....	109	96	104	88	88	94	77	88	89	86	102	136	96
Monroe.....	81	72	72	62	60	65	72	80	83	80	86	102	76
Montgomery.....	110	97	98	89	86	96	103	97	96	90	101	131	100
Moultrie.....	339	237	192	174	187	191	229	273	294	352	392	373	269
Perry.....	98	86	92	84	68	70	68	76	76	76	83	105	82
Randolph.....	92	80	82	68	67	72	78	85	88	84	94	114	84
Shelby.....	95	87	92	96	94	99	102	117	124	113	97	133	104
St. Clair.....	91	86	89	82	77	76	78	84	87	86	95	113	87
Washington.....	87	77	78	66	60	62	67	74	75	73	84	113	76
<i>Missouri</i>													
Audrain.....	135	129	121	112	105	100	99	103	105	103	109	137	113
Buchanan.....	23	28	23	26	45	71	79	56	48	35	24	19	40
Cole.....	3	3	7	139	116	96	100	112	109	113	119	129	87
Crawford.....	162	164	172	156	126	112	119	131	146	151	184	226	154
Franklin.....	101	92	94	84	76	67	68	74	76	75	85	108	83
Gasconade.....	73	72	90	95	92	73	69	71	69	60	71	94	77
Howell.....	180	144	154	145	135	120	85	81	100	103	139	176	130
Jefferson.....	140	125	126	120	114	106	99	106	112	114	137	166	122
Lincoln.....	92	77	80	70	70	73	76	81	84	78	95	117	83
Maries.....	188	183	204	172	201	187	143	146	118	144	154	177	168
Marion.....	172	177	154	160	134	158	160	101	106	111	129	164	144
Montgomery.....	96	81	82	93	98	91	100	116	122	117	128	151	106
Oregon.....	825	790	963	804	629	438	317	363	266	156	190	559	525
Osage.....	107	97	99	120	134	108	89	86	88	89	118	140	106
Phelps.....	82	74	106	95	79	65	66	61	62	64	84	95	78
Pike.....	195	167	160	129	141	135	128	122	125	124	152	186	147
Ralls.....	172	153	126	104	83	60	84	112	104	110	139	171	118
St. Charles.....	103	103	112	101	104	110	85	102	104	106	124	144	108
St. Louis.....	200	193	199	188	185	190	202	196	193	195	203	209	196
Stoddard.....	43	34	49	36	33	48	51	56	45	32	39	49	43
Texas.....	222	212	212	176	148	126	121	128	138	14	192	254	173
Warren.....	90	85	91	85	66	73	86	93	91	80	107	121	89
Wright.....	187	168	167	165	155	144	150	150	161	169	206	277	175

TABLE 38.—NUMBER OF PRODUCERS IN THE ST. LOUIS MILKSHED, BY COUNTIES, MAY, 1933, TO JUNE, 1934

Illinois counties	Number of producers shipping—			Missouri counties	Number of producers shipping—		
	10 months or more	9 months or less	Total		10 months or more	9 months or less	Total
Madison.....	1 397	631	2 028	Franklin.....	453	218	671
St. Clair.....	862	389	1 251	Jefferson.....	380	112	492
Washington.....	920	267	1 187	St. Charles.....	105	66	171
Clinton.....	856	173	1 029	Lincoln.....	132	36	168
Randolph.....	627	205	832	Marion.....	36	100	136
Effingham.....	308	298	606	Texas.....	32	42	74
Fayette.....	369	212	581	St. Louis.....	46	23	69
Bond.....	368	82	450	Pike.....	36	21	57
Montgomery.....	300	147	447	Montgomery.....	29	25	54
Marion.....	145	186	331	Phelps.....	35	12	47
Monroe.....	249	66	315	Audrain.....	32	7	39
Macoupin.....	190	104	294	Wright.....	12	23	35
Greene.....	133	78	211	Howell.....	15	13	28
Jersey.....	115	52	167	Gasconade.....	22	5	27
Shelby.....	18	113	131	Warren.....	13	13	26
Moultrie.....	2	106	108	Crawford.....	23	2	25
Perry.....	63	20	83	Osage.....	14	5	19
Douglas.....	0	58	58	Cole.....	13	5	18
Clark.....	6	50	56	Ralls.....	4	6	10
Coles.....	1	54	55	Maries.....	4	0	4
Cumberland.....	13	37	50	Washington.....	0	4	4
Christian.....	33	15	48	Stoddard.....	3	0	3
Jackson.....	3	21	24	Oregon.....	1	1	2
Jefferson.....	7	6	13	Buchanan.....	1	0	1
Piatt.....	0	13	13				
Jasper.....	0	8	8				
Sangamon.....	0	4	4	Missouri totals.....	1 441	739	2 180
Clay.....	0	2	2				
Illinois totals.....	6 985	3 397	10 382	Grand totals.....	8 426	4 136	12 562

TABLE 39.—AVERAGE DAILY MILK PRODUCTION PER FARM BY 8,232 PRODUCERS IN THE ST. LOUIS MILKSHED, CLASSIFIED BY PROPORTIONS THAT BASE VOLUMES WERE OF MAY VOLUMES, JUNE, 1933, TO MAY, 1934

Percentage that base volumes were of May volumes	Number of producers	(Daily production per farm in pounds)													Average
		June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May		
Under 10.....	21	62	45	51	36	28	42	68	77	79	60	71	112	61	
10-19.....	350	70	54	47	34	32	42	56	70	77	76	95	135	66	
20-29.....	1 726	99	81	76	62	61	67	78	91	98	100	120	158	91	
30-39.....	2 466	118	104	103	92	89	91	95	104	106	106	123	156	107	
40-49.....	1 772	122	114	119	109	107	106	106	108	107	104	115	140	113	
50-59.....	1 034	113	110	120	112	110	110	103	101	98	90	96	114	106	
60-69.....	452	110	112	122	118	114	114	109	100	94	83	87	101	105	
70-79.....	238	100	102	113	106	104	99	90	86	77	69	70	81	92	
80-89.....	111	84	91	103	104	98	90	83	76	67	59	56	64	81	
90-99.....	55	94	94	106	103	100	92	89	84	76	59	56	60	84	
100 or over.....	7	74	76	87	79	67	48	38	62	50	23	20	32	55	
(Indexes of production: 12 months average = 100)															
Under 10.....	21	102	74	84	59	45	68	112	127	130	99	116	185	106	
10-19.....	350	106	82	72	52	49	64	85	107	118	116	145	206	109	
20-29.....	1 726	109	89	84	68	67	74	86	100	108	110	132	174	114	
30-39.....	2 466	110	97	96	86	83	85	89	97	99	99	115	145	115	
40-49.....	1 772	108	100	105	97	95	94	94	95	95	92	102	124	107	
50-59.....	1 034	106	103	113	106	104	104	96	95	92	85	90	107	105	
60-69.....	452	104	106	115	112	108	108	104	95	90	79	82	96	107	
70-79.....	238	109	111	124	116	114	108	99	94	84	75	76	88	107	
80-89.....	111	104	112	127	128	120	111	102	94	82	73	70	79	107	
90-99.....	55	111	111	126	122	119	108	106	100	90	70	67	71	107	
100 or over.....	7	136	139	160	144	123	88	70	113	91	42	36	59	107	

TABLE 40.—TOTAL MILK PRODUCTION AND CLASS I SALES IN THE ST. LOUIS SALES AREA, JUNE, 1933, TO SEPTEMBER, 1934^a

Month	Class I sales	Indexes (January, 1934 = 100 ^b)	Total production	Indexes (September, 1933 = 100 ^b)
<i>1933</i>				
	<i>lbs.</i>		<i>lbs.</i>	
June.....	17 213 443	104	33 501 951	117
July.....	17 533 395	103	31 272 214	106
August.....	17 493 687	102	31 833 882	108
September.....	17 743 826	107	29 590 729	100
October.....	17 785 607	104	29 679 179	100
November.....	17 001 608	103	31 458 586	110
December.....	17 130 784	100	34 899 504	118
<i>1934</i>				
January.....	17 101 920	100	36 767 334	124
February.....	15 711 592	102	33 351 332	125
March.....	17 542 852	103	35 506 052	120
April.....	16 824 101	102	39 182 270	137
May.....	18 091 395	106	51 198 356	173
Total for 12 months.....	207 174 210	...	417 311 389	...
June.....	17 928 154	108	40 423 669	141
July.....	18 285 155	107	36 056 652	122
August.....	17 482 020	102	39 554 000	134
September.....	16 167 425	95	37 366 322	126
October.....	16 922 948	99	35 393 900	120
November.....	15 976 444	93	32 312 455	109
December.....	15 850 820	93	31 506 673	106

^aAs reported to St. Louis Milk Market Administrator under U. S. License No. 35.

^bThis was the low month of the 12 months June, 1933, to May, 1934.

(Sources of Data in Table 2, page 100)

^aRent intervals and number of families were determined from the 1930 U. S. Census (Population, Vol. 6: p. 63; Table 69, p. 756; and Table 24, p. 15). The number of families includes only the number reported in the Census classification on rents. For families owning their own homes the rental value is considered to be 10 percent of the total Census valuation. See "Marketing Notes," personal publication by Paul D. Converse, University of Illinois.

^bAverage incomes were estimated to be four times the rentals in 1930. See "The American Consumer Market," 1932, Table 23, p. 37, published by *The Business Week*.

^cThe weighted average income for 1930 was corrected to the 1934 general price-level by multiplying

by $\frac{107.5}{126}$ (from *Farm Economics*, N. Y. State Coll. Agr., Cornell Univ., June, 1934, p. 2073).

(Sources of Data in Table 6, page 109)

The total number of families for St. Louis county and the United States are from the U. S. Census of 1930.

The estimate of the number of families in the area using ice refrigeration is based on: (a) data obtained from U. S. Census of Manufactures for Missouri, 1931; and (b) information received thru the courtesy of the St. Louis Association of Ice Industries.

The number of families in the area using mechanical refrigeration is based on a survey made by the Union Electric Light and Power Company of St. Louis.

The number of families in the United States using some kind of refrigeration is quoted from a statement by W. S. Shipley in the *Refrigerating World*, October, 1933, p. 5.

(Sources of Data in Table 13, page 139)

Baltimore. Information furnished by J. M. Lescure, Director, Bureau of Milk Control.

Boston. Health Department, city of Boston, "Regulations for the Care and Sale of Milk," Art. 6 and Art. 12, Sec. 2 and Sec. 8. Maximum bacterial count after pasteurization also fixed by Massachusetts statute.

Buffalo. Information furnished by the Board of Health.

Chicago. Information furnished by Herman H. Bundesen, President, Board of Health.

Cleveland. Cleveland Sanitary Code, Amendment 9, Sec. 451, para. H.

Detroit. Information furnished by Russel R. Palmer, Chief Milk Inspector, Department of Health.

Los Angeles. Information furnished by Wm. Veit, City Veterinarian, Department of Health.

Milwaukee. Milk ordinance of the city of Milwaukee, Sec. 780.

Minneapolis. Milk ordinance of the city of Minneapolis, Sec. 2 (B), para. 1, and Sec. 11, para. 11.

New York. City of New York, Board of Health, "Regulations Governing the Production, Handling, etc., of Milk," Regulation 79.

Philadelphia. Information furnished by Edward E. Behrens, Supervisor of Cattle, Food, Meat, and Milk Inspection, Bureau of Health.

Pittsburgh. Information furnished by Leicester Patton, Assistant Superintendent, Bureau of Food Inspection, Department of Public Health.

St. Louis. Milk ordinance of the city of St. Louis, Sec. 27 (b).

San Francisco. Information furnished by Board of Health.

QUESTIONNAIRE SENT TO PRODUCERS

MARKET ADMINISTRATOR
 UNITED STATES MILK LICENSE NO. 35
 ST. LOUIS MILKSHED
 3688 CHOUTEAU AVE.
 ST. LOUIS, MO.

June 15, 1934

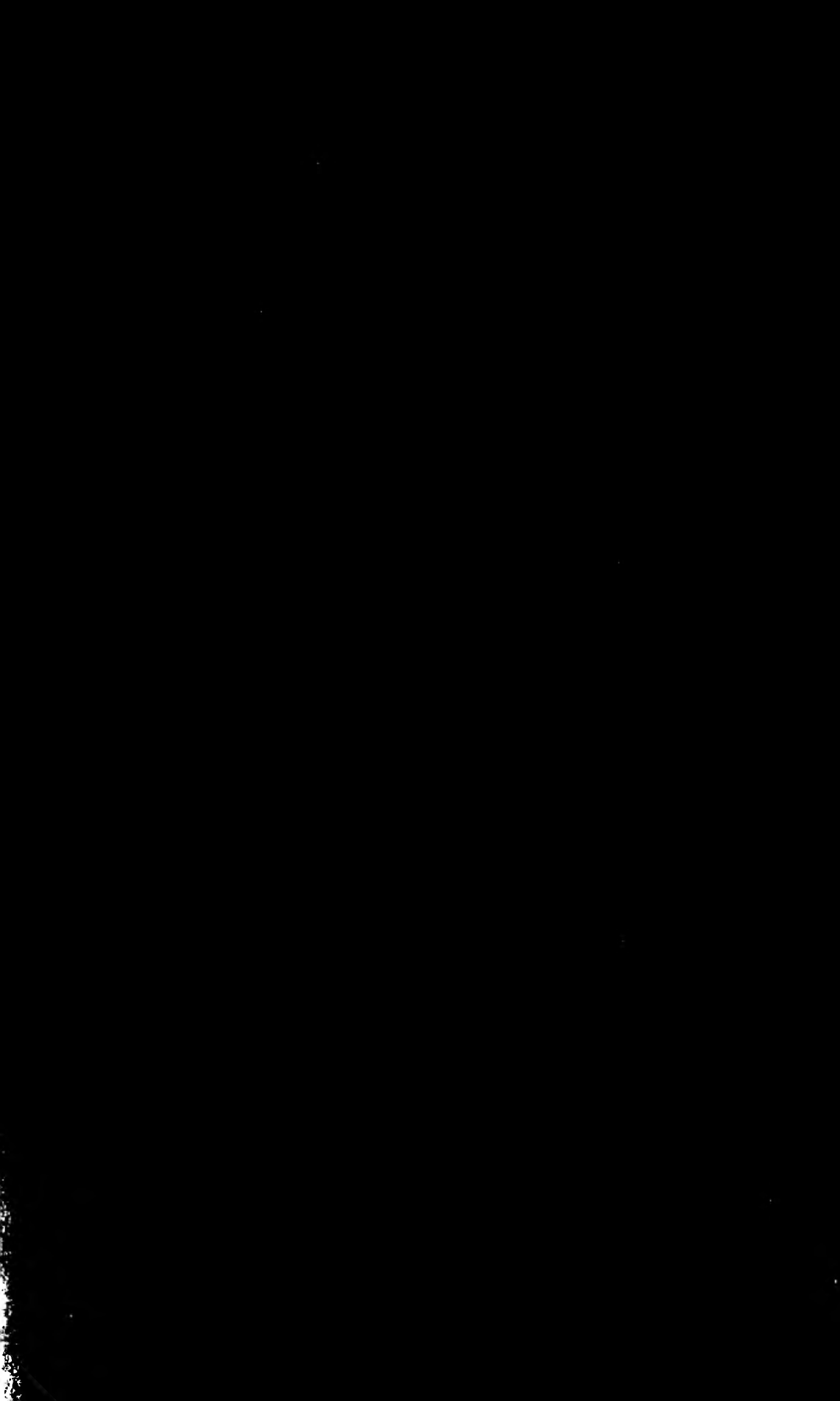
MR. JOHN SMITH
 EDWARDSVILLE, ILLINOIS

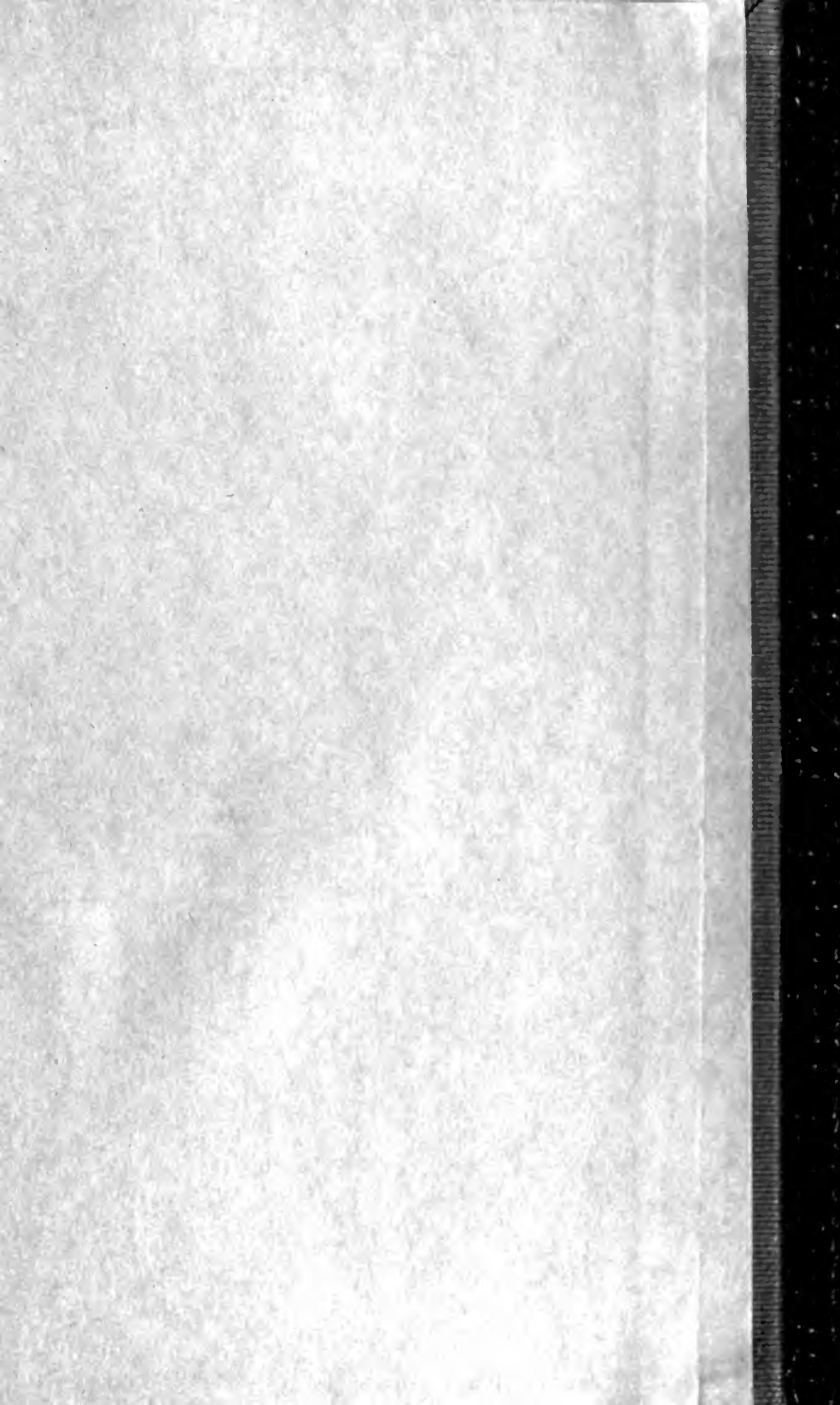
Answers to the following questions will furnish information necessary for a study of the St. Louis Milkshed. Answer each question and return in enclosed stamped envelope not later than June 20, 1934.

1. What is the name of the dealer who buys your milk?.....Dealer
2. What is the name of your hauler?.....Hauler
3. What is the name of the station or plant where your milk is received?..... Station
or plant
4. How many miles from your farm to the plant or station where your milk is received?.....Miles
 How much of this distance is hard road?.....Miles
 How much of this distance is gravel road?.....Miles
 How much of this distance is dirt road?.....Miles
5. How much per 100 pounds are you now paying for having milk hauled from your farm to the milk plant?..... Cents per
100 pounds
6. How many cows are you now milking?.....Cows
7. How many dry cows do you have?.....Cows
8. How many two-year-old heifers, which have not calved, are on the farm which you operate?..... Two-year
old heifers
9. How many yearling heifers on the farm which you operate?..... Yearling
heifers
10. How many heifer calves less than a year old do you have, which you are raising to produce milk?..... Heifer
calves

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