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KANSAS STATE AGRICULTURAL COLLEGE.

The Marketing of Kansas Butter.

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The Marketing of Kansas Butter.

SUMMARY.

During a period of eighteen months the Kansas State Agricultural Experiment Station made a thorough investigation of the methods, processes and costs of marketing butter made both on farms and in creameries of the state. Creameries reported the complete facts of their business for more than three-fourths of the Kansas creamery butter made during the period of study, while representative farmers and stores gave accurate facts concerning their respective operations. The facts concerning the progress of Kansas dairying were obtained from numerous library sources and from pioneer Kansas dairymen. A summary of the investigation brings forward the following facts and conclusions.

FIRST. Dairy farming in Kansas has been, and continues to be, a side line on the average farm. Experience with whole-milk creameries, local private creameries, and skimming-station centralizers proved that they were not adapted to Kansas conditions, and led to the establishment of cream-station and direct-shipper centralizers, which are well adapted to the conditions of Kansas dairy farming.

SECOND. Farm butter-making has rapidly declined in Kansas owing to the rapid increase in the efficiency of creameries. Nevertheless, there are many who make farm butter. Those who sold the largest quantities obtained the best prices. Quality of farm butter depends upon specialization, which in turn is warranted only when a large quantity can be made and sold. Only those who lived close enough to favorable markets found it worth while to make large amounts of farm butter.

THIRD. The average farmer does not live close enough to favorable markets to make and market butter profitably, except in so far as the stores follow the practice of paying the same price for both good and poor butter. This practice robs Peter to pay Paul. If one farmer obtains a higher price for his butter than it is worth, the loss is made up either by charging another farmer too high a price for the goods he buys, or else by underpaying the man who produces the good butter.

FOURTH. Kansas has seventy-eight creameries. Forty-one are centralizers, which make more than ninety-five percent of the creamery butter of the state. Only one-third of the creameries make annually 100,000 pounds of butter or more each. Centralizers are necessary because there is only one creamery for each 1053 square miles, and the average farmer lives nineteen miles from a creamery. This is too great a distance to drive, so that cream shipment is the farmers' economical choice.

FIFTH. The average creamery patron in the state sells less than one-quarter of a five-gallon can of cream per week. He finds it more profitable, therefore, to sell to the cream station at the cream station prices, than to ship direct and deduct from the delivered price the expense of shipping a partly filled can. It is the small amount of butterfat supplied by the average creamery patron which accounts for the fact that 2020 cream stations deliver four-fifths of the butterfat from the farmer to the creamery. The few farmers who produce sufficient cream to justify direct shipment are following this method.

SIXTH. The prices paid for delivered butterfat by centralizers averaged above Elgin prices, and according to prevailing economic conditions, appear to be fair. The fact that butterfat prices in Kansas are somewhat lower than in some other states is because farmers choose to sell four-fifths of their butterfat through cream stations rather than to deliver the cream at their own expense. The difference between prices paid to farmers in Wisconsin and in Kansas, for example, was due to the difference in cost of getting butterfat from the farm to the creamery in the two states. Wisconsin farmers pay 1.5 cents to deliver their butterfat. Kansas farmers, because they lived nineteen instead of five miles from a creamery on an average, pay 3.46 cents to deliver their butterfat.

SEVENTH. More and better dairy cows would have the effect of reducing the cost of getting butterfat to the creameries, of lowering the cost of making and marketing butter by the creameries, and would result in higher net prices and greater profits to the farmer.

The Marketing of Kansas Butter.

By THEODORE MACKLIN.

For many years there has been a general feeling in Kansas that butterfat prices were unjustifiably low, while butter prices were excessively high. The general suspicion that somewhere between the farmer and the consumer powerful parties were reaping an exorbitant profit, taken by unfair competitive means from what the consumer and farmer often term the "helpless parties at either end," led the Kansas State Agricultural Experiment Station to make a thorough study of the whole situation. An elaborate system of securing the facts of creamery operations in Kansas was established, with the cooperation of the creameries producing four-fifths of the creamery butter of the state, and the information, summarized monthly, has been obtained continuously since July 1, 1915. Farmers and stores in every part of the state responded liberally to requests for information concerning their methods of producing and marketing butterfat and butter. It has been the object of the investigation to study facts and processes as they exist regardless to whether the information might condemn or justify present methods of marketing butterfat. It was pointed out that the efficiency as well as the fairness of each process and its charges or returns should be made clear. In the presentation of the facts as found and in the pointing out of possible improvements it is desired above all else that the reading public hold constantly in mind one general conclusion. Whatever the individual sympathy may be, the responsibility for present conditions rests jointly upon the producer, whether he be a farmer or middleman, upon the consumer, and upon the state. Each of these parties has a duty to perform, and only so far as all cooperate in a spirit of confidence can the perplexing problems of marketing be satisfactorily solved.

BUTTER PRODUCTION IN KANSAS.

Although Kansas makes no claim to a high rank in the quantity of butter produced in any one year, she does boast of a progress in dairying which has made headway against great odds. In 1880 as a creamery butter-making state she stood twenty-sixth, but during the decade increased production advanced her to tenth place. Since then, in spite of the more rapid creamery progress in some of the other states, Kansas has about held her own, ranking eighth in 1900, and eleventh in 1910. Had all of the butterfat produced in Kansas in 1910 and shipped to other states been made into butter within the creameries of the state, she would undoubtedly have continued to hold eighth place.

Many conditions have conspired to make the history of creamery organization in Kansas checkered but interesting. Before the first creameries were built in Kansas more than forty cheese factories attempted to teach the farms in scattered sections that farm. butter-making

was not necessarily the most profitable way of disposing of their surplus milk and cream. Their attempts, as shown by their subsequent disappearance, proved to be a failure. Cheese-making did not become popular with Kansas dairymen. On the heels of the cheese factory came the creamery method of making butter, as a substitution for individual churning on the farm. In the eighties great numbers of creameries built by creamery promoters showed that at least part of the farmers in Kansas were convinced that this method of making butter was more profitable than the irksome method used at home. During the fifteen years from 1885 to 1900 not less than five hundred local creameries, fully equipped with power separators for handling whole milk, were built in Kansas, at an average cost to the farmers in each community of no less

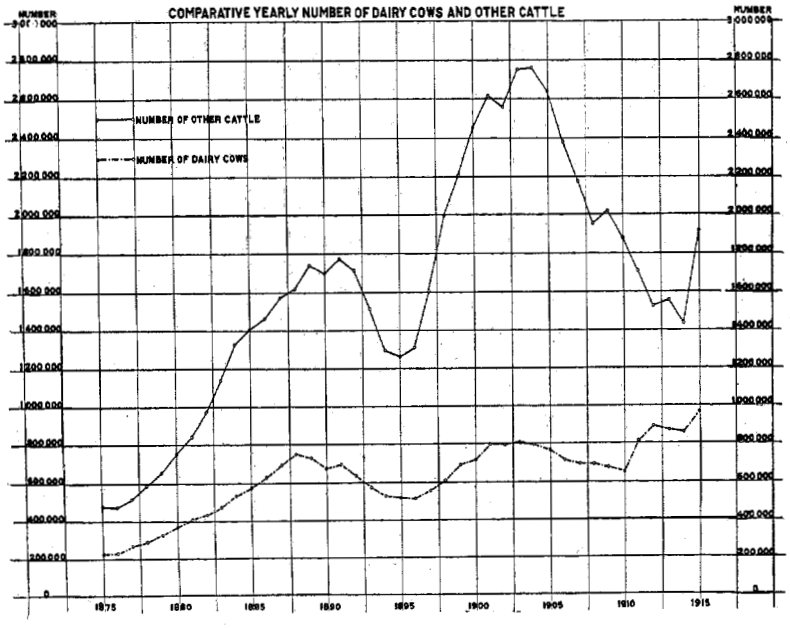


FIG. 1. Comparative Yearly Number of Dairy Cows and Other Cattle.

The number of dairy cows, represented by the lower line, rose or fell with the number of beef cattle in the state, until 1910. Since then dairy cows have rapidly increased independently of the changes in numbers of beef cattle. It means that dairying is becoming more popular in Kansas.

than $4000. The total investment by farmers in Kansas, while imbued with the enthusiasm of boosting dairying by introducing the creamery system of butter-making, was not less than $2,000,000. The experience which these widely spread groups of farmers had with local whole-milk creameries was both thorough and unsatisfactory. It was an experiment to which farmers gave liberally not only of their savings but of their enthusiasm as well. The unfortunate circumstance, so far as the farmers who owned the creameries were concerned, was that this en-

thusiasm for dairying did not last long enough in any one local community.

Every farmer who has lived in Kansas for ten years recognizes the disposition of Kansas seasons to be erratic and variable. In the seasons when crop conditions were favorable every effort was exerted to make the most of grain farming. Any chore which happened to interfere with crop work was postponed or else indefinitely dropped from the day's work. During poor crop seasons, on the other hand, every possible chore was well done which gave promise of adding something to the small crop returns. It was during such favorable crop years that

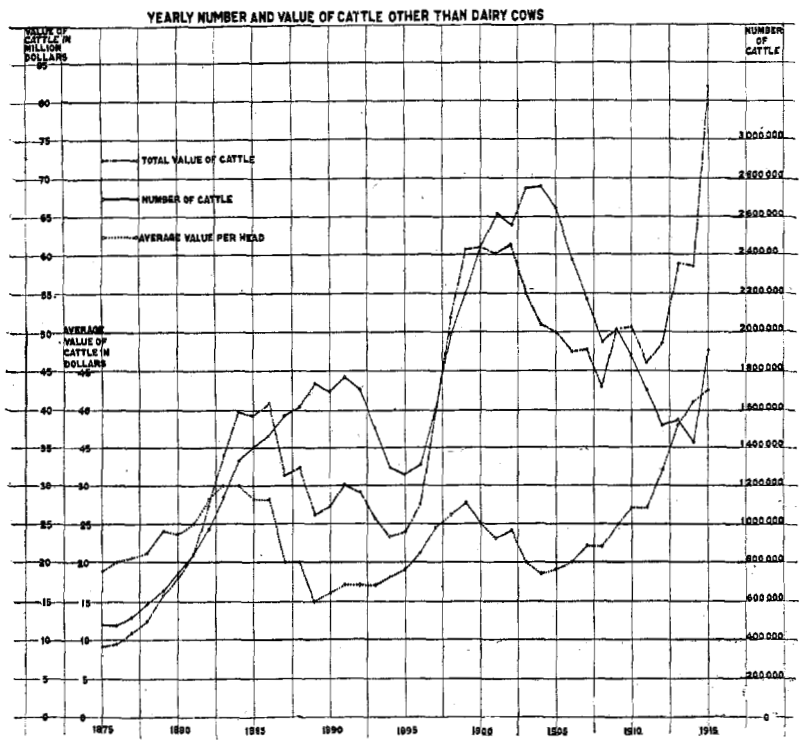


FIG. 2. Yearly Number and Value of Cattle Other Than Dairy Cows.

Although the average value of beef cattle has steadily risen from $18.50 in 1904 to $42.50 in 1915, the numbers kept in Kansas have fallen, and only the abnormal war conditions seem to have caused a sudden increase.

the farmers of many sections devoted unusual effort to dairying, and that their interest was easily aroused to the point of building a creamery, and doing away with the drudgery of farm butter-making. Apparently no very large number of farmers, while under the spell of enthusiasm for building and operating a local whole-milk creamery, considered the permanency of farm milk production in Kansas during seasons of good crop conditions. This oversight turned out to be the hub

of the creamery wheel. Once the spokes were disconnected from the hub, or, in other words, when individual farmers discontinued the bringing of milk to the creamery, there ceased to be any need for the $4000 plant or for the butter-maker. The local creamery, fathered by the farmers, was starved to death because they no longer brought it the usual minimum amount of nourishment.

The fact that many small creameries were seen by observers to be standing idle within a period of anywhere from a few months to a few years after opening was merely an indication that within that short period of time the farmers had been prevailed upon by Kansas weather conditions to change their minds and grow more acres of crops instead of taking the time to milk cows and deliver milk.

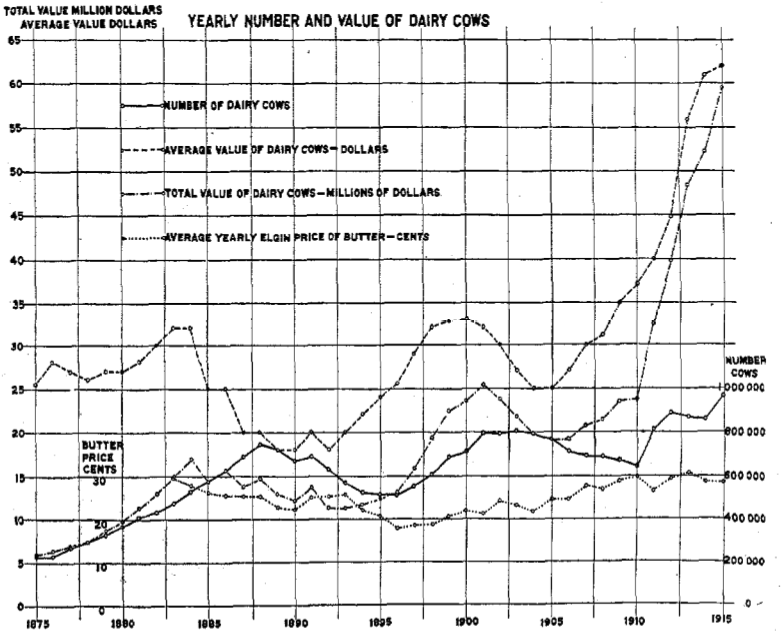


FIG. 3. Yearly Number and Value of Dairy Cows.

The average value of dairy cows has advanced from $25 in 1905 to $62 in 1915, an addition amounting to 148 percent. The fact that dairy cattle values are rising so rapidly and that a gain of 225,000 head occurred in five years, from 1910 to 1915, shows that dairying is becoming more profitable in Kansas.

The fact that farmers did consistently change from one enterprise to another was fully justified by the character of the combined farm enterprise of each individual farm. The mistake in building creameries was to have put up so many on such a feeble guarantee of a sufficient and continuous supply of butterfat. The consequence was that practically all of the local creameries had to go out of business with a loss to the farmers of from fifty to seventy-five cents on the dollar. It was a costly experiment undertaken by the farmers. It proved to them that as long as milking cows in Kansas was a side issue, to be developed or

left alone alternately according to crop conditions, butter-making on the farm was far less expensive and more adapted to their inclination than was the local whole-milk creamery.

When the farmers no longer provided a butterfat market for themselves a new situation was found to exist. Although the majority of farmers ceased to have milk to deliver to the small creamery, there were still a goodly number who desired to sell milk if some market could be provided. In different parts of the state the idea was put into operation of reopening local creameries, not as butter-making plants but as skimming plants. Here the cream was separated from the milk and then shipped to some central point where a large enough quantity had been gathered to keep one creamery operating full time. As rapidly as the private originators of the idea could develop new stations, more of the

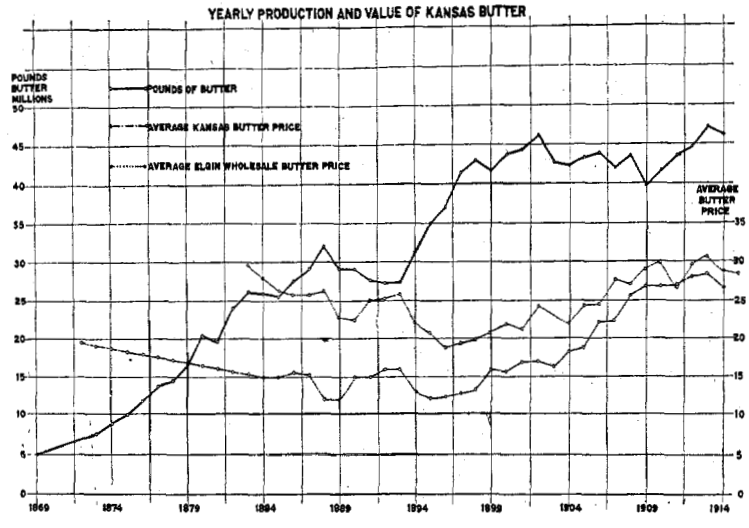


FIG. 4. Yearly Production and Value of Kansas Butter.

The average price received in Kansas for butter, represented by the lowest line, has been growing closer to the Elgin price for many years. Since 1904 these prices have been closer than ever before, showing partly that for Kansas centralizers give better results than do local creameries, and partly that the increasing proportion of creamery-made butter and the decrease of farm-made butter is a step from lower to higher prices.

idle small creameries were purchased from the farmers and utilized as skimming stations. Thus a new market was created for the farmers who persisted in milking. However, it did not become a permanent market for at least two reasons. Primarily, not enough farmers delivered milk to them to provide the minimum quantities of butterfat required for the successful operation of central creameries, while, secondly, the cost of operation and of shipping fat made too great a combined cost to permit creameries to pay satisfactory prices to farmers for their milk. It became of prime importance to induce more farmers to deliver butterfat for creamery purposes and to reduce the cost of getting the in-

creased quantities to the central churning plant.. The introduction of the farm hand separator and the general use of the Babcock butterfat test provided the means of bringing about the important changes required to improve the skimming station plan. With the possibility of milking a few cows as a side line and saving the cream for weekly or semiweekly delivery, it became practicable for the grain farmer to market small quantities of butterfat. Since a large proportion of the farmers of Kansas belonged to this class, the increased volume of butterfat received by creameries resulted in many important changes, not only in the cost of concentration, but also in the cost of making and selling butter, and in the prices received by creameries and the prices paid to farmers.

The results of the present creamery system become evident when the comparisons given in Figs. 1, 2, 3, and 4 are correlated with the sketch of Kansas creamery progress. Never have Kansas farmers been served by any method of butter-making which provides as high prices and gives as profitable returns as does the present creamery system. This is amply proved by the constant increase in Kansas butter prices

TABLE I. Increase of acreage of alfalfa in Kansas, 1891 to 1915.

DATE.	Acreage in alfalfa.	Increased acreage over each preceding date.	Number of new acres put in alfalfa each year.
1915	1,359,498	433,006	86,601
1910	926,492	323,932	64,786
1905	602,560	326,552	65,310
1900	276,008	136,130	27,226
1895	139,878	105,494	25,099
1891	34,384		

in relation to Elgin butter prices shown in Fig. 4, and by the enormously increased average value of dairy cows in Kansas shown in Fig. 3. Undoubtedly the tendency to gain higher net profits from the sale of butterfat is due partly to the higher prices received and partly because many farmers are gradually reducing the cost of producing butterfat. Both improvement in the type of creamery organization and a rapidly increasing acreage in alfalfa are the most obvious explanations of this recent advancement in dairy development.

To the Kansas farmer whose cows produce more butterfat than is required for home use there has always been the possibility of making a surplus of farm butter which could be disposed of in one way or another. Any method which attempted to secure butterfat from the farmer has had to compete with the possibility of farm butter-making by giving the farmers a better estimated return. If the actual price was no higher it had to show a saving in the farmer's time, or else prove that it enabled him to realize an income in a more convenient

manner. The high point in the production of butter in Kansas was reached in 1899 when the farmers and creameries of the state made almost sixty million pounds. However, ten years previously the largest quantity of farm butter was made. With the progress of the creamery

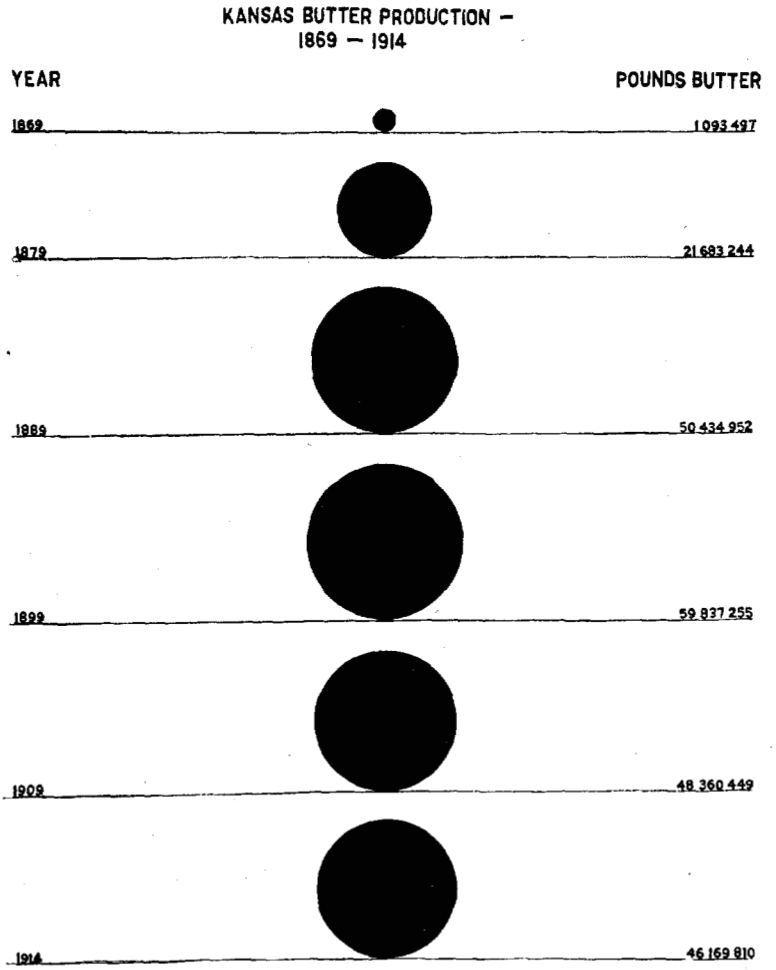


FIG. 5. Kansas Butter Production.

The high point in the production of butter in Kansas was reached in 1899. Since then the amount of butterfat produced for butter-making has remained about constant, but owing to the cream-station system approximately one-quarter of the butterfat finds its way to creameries in other states. This fact accounts for the decline in Kansas butter production since 1899.

system more creamery butter and less farm butter became the rule, until in 1914 practically two-thirds of Kansas butterfat found its way to the markets of the country as a creamery product.

FARM BUTTER.

In 1914 the farmers of Kansas made 19,757,121 pounds of butter on the farms. This was almost ten million pounds less than they made a

TABLE TI. Kansas butter production and out-of-state butter made from Kansas butterfat.

YEAR.	Total pounds of butter made in Kansas.	Farm-made butter in Kansas.	Creamery-made butter in Kansas.	Creamery-made butter made from Kansas cream outside the state.
1869	1,093,497	1,093,497	.....	.....
1879	21,683,244	21,671,762	11,482	.....
1889	50,434,952	46,117,076	4,317,876	.....
1899	59,837,255	41,640,772	18,196,483	.....
1909	48,360,449	29,647,881	18,712,568	.....
1914	46,169,810	19,757,121	26,412,689	9,366,828

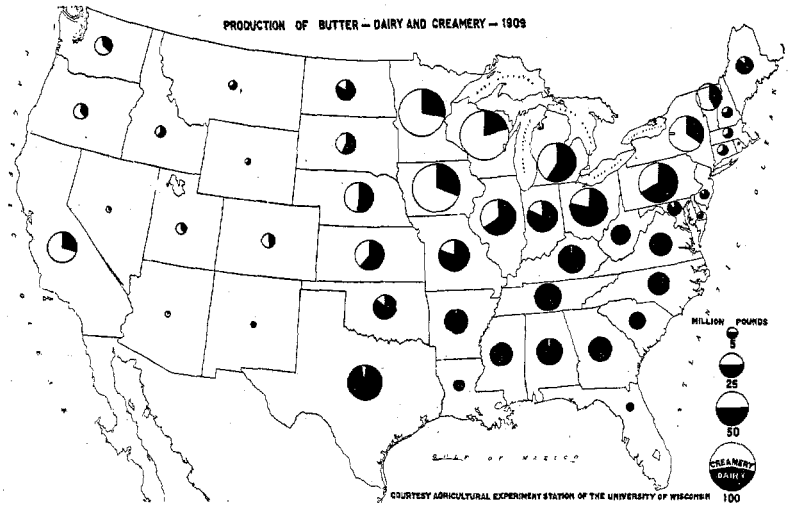


FIG. 6. Production of Butter, Dairy and Creamery, 1909.

While more farm butter was made in Kansas in 1909 than creamery butter, the reverse was true in 1915. Following the lead of farmers in Wisconsin, Minnesota and Iowa, the Kansas farmers are finding it relatively more profitable to sell butterfat than to make farm butter. The creamery is the specialized institution that produces high quality more economically than other methods.

decade before. Comparative data for the number of farms and the quantity of butter made, consumed and sold are not available for any year later than those of the 1910 census, but since a decline in the quantity of farm butter has taken place, these figures will not exaggerate

the present conditions. The average Kansas farmer made 3.2 pounds of butter a week, of which 1.8 pounds were consumed on the farm and the other 1.4 pounds were sold. Little variation existed over the state either in the amount of butter made on the average farm or in the number of cows kept by the average farmer. The number of cows in each square mile was high or low, not because of a difference in the number kept by each farmer, but because in some counties the average farm covered more than a section of land, while in others there were

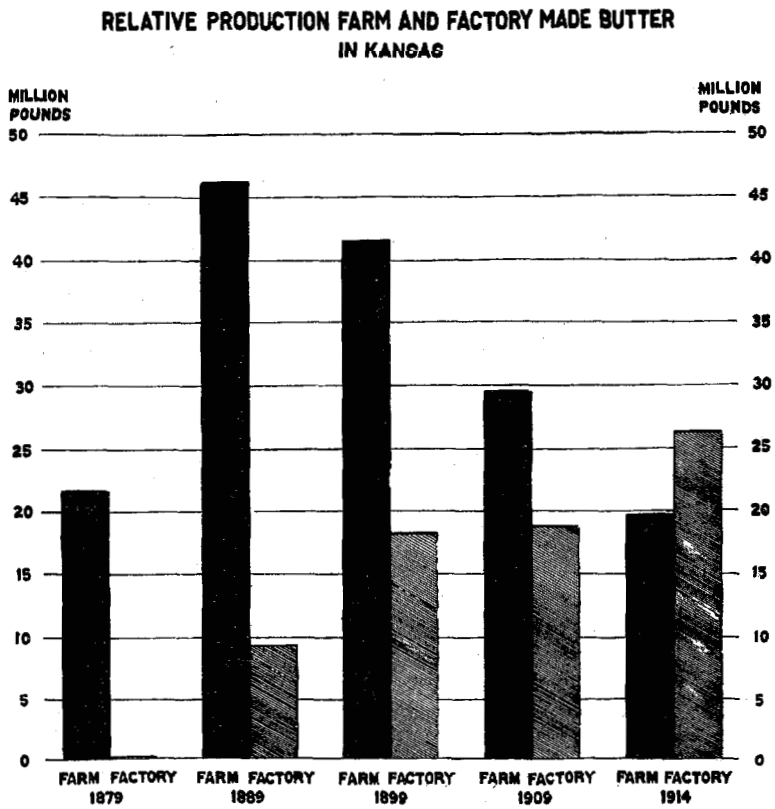


FIG. 7. Relative Production Farm and Factory Butter in Kansas.
The amount of butter made by creameries in Kansas has steadily increased since 1879, while the amount of farm butter has rapidly declined. Were all the butterfat which leaves the farms of Kansas for creamery butter-making purposes manufactured within the state, the increase of factory butter since 1899 would appear much more rapid.

from about two to six farms in each square mile. These facts indicate that farm butter-making was purely a side issue with most farmers.

Information secured directly from a large number of farmers in every part of the state indicates that three-fifths of the farmers who make butter for home use sell some of their product, while the other two-fifths make enough for home use only. The average number of

TABLE III. Farm butter produced, consumed, and sold and dairy cows.

County Group According to Number of Cows per Square Mile.	Number of farms per square mile.	Number of cows per square mile.	Number of cows per farm.	Pounds of farm butter made per farm.	Pounds of farm butter consumed per farm.	Pounds of farm butter sold per farm.	Pounds of farm butter made per week.	Pounds of farm butter sold per week.
Under 5 cows per square mile	.75	2.6	3.6	132	77	55	2.5	1.0
5 cows and under 10 per square mile	1.75	7.5	4.2	174	101	73	3.4	1.4
10 cows and under 15 per square mile	2.90	12.1	4.2	179	102	77	3.4	1.5
15 cows and under 20 per square mile	4.00	16.7	4.2	160	87	73	3.1	1.4
20 cows or more per square mile	5.90	21.1	4.3	142	74	68	2.7	1.5
Kansas average	2.20	9.0	4.1	166	93	73	3.2	1.4

pounds for home use was 144 for the year, or 2.77 pounds a week, while those who sold butter not only produced more but sold considerably more than was made by the average farmer. The conditions of the local

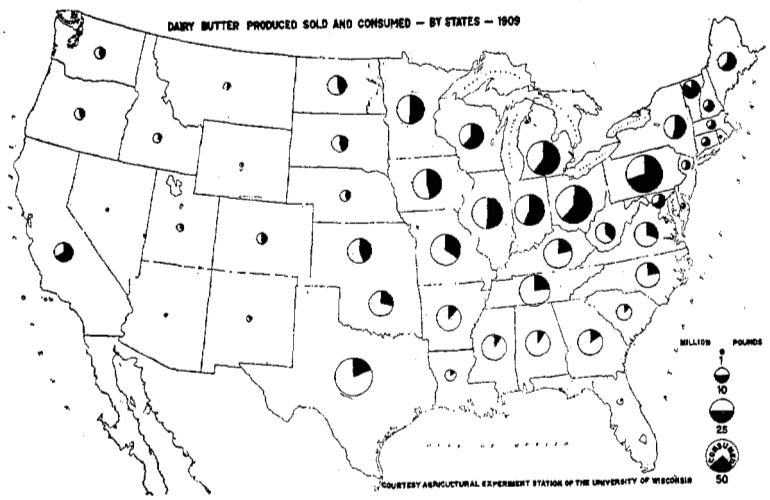


FIG. 8. Dairy Butter Produced, Sold and Consumed, 1909.

Considering the size of the state, the number of farms, and the population, the 29 1/2 million pounds of farm butter made in Kansas in 1909 was little more than enough for local consumption. More than half was consumed on the farms, and the remainder which was sold amounted to only 1.4 pounds for each farm per week through the year. Farm butter-making is for the most part a side line in Kansas. Many other states make a higher proportion of farm butter to sell.

TABLE IV. Amount of butter made, consumed and sold by patrons of the different methods of marketing butterfat and milk.

TYPE OF PATRON.	Average pounds of butter made.	Average pounds of butter, home use.	Average pounds of butter sold by those selling.	Proportion who sell.
Special whole-milk dairymen.....	254	154	200	Less than one-half.
Direct shipment always.....	201	201	None.	None.
Local creamery always.....	282	182	500	One-fifth.
Cream station always.....	179	157	167	One-fourth.
Condensary.....	None.	None.	None.	None.
According to amount of fat—direct shipment or cream station.....	254	193	430	Less than one-half.
When have enough cream—cream station	492	108	584	All.
Make butter to sell.....	626	139	554	Nine-tenths.
Average of all patrons.....	416	144	453	Three-fifths.

market for farm butter seem to provide the only satisfactory explanation for the differences in the amount of butter made and sold by different farmers.

PRICES OF FARM BUTTER.

The average prices received for farm butter varied from 27 cents during the summer to 31 cents through the winter, averaging for the year 29.47 cents. Fall and winter prices of 30 and 31 cents were higher

TABLE V. Comparative seasonal prices of farm butter.

SEASON.	Pounds of butter.	Value of butter.	Average price of butter.
Spring	8,383	$2,467.83	$0.2900
Summer	7,651	2,078.77	.2700
Fall	7,441	2,245.48	.3000
Winter	7,980	2,474.47	.3100
Year average	31,435	$9,266.55	$0.2947

than the spring and summer prices of 29 and 27 cents. Farmers sold butter directly to consumers, from whom they obtained the highest yearly average prices, amounting to 30.5 cents. Storekeepers paid the farmers who reported the price an average of 29.5 cents, or one cent below what farmers obtained by selling direct to consumers. Only a small proportion

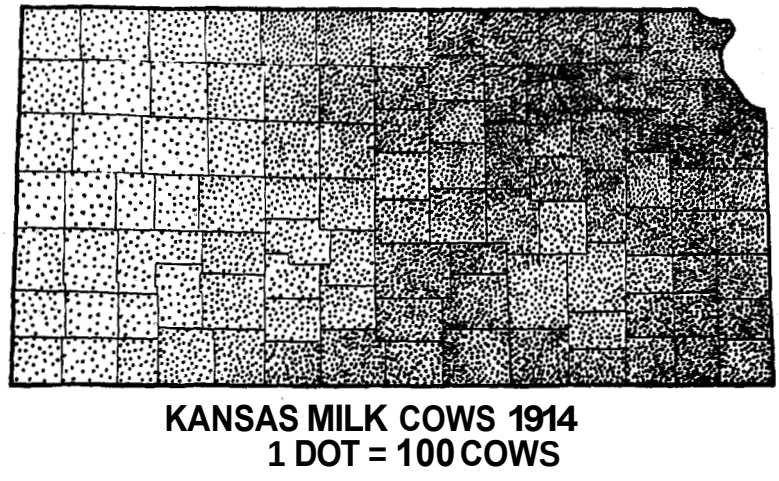


FIG. 9. Kansas Milk Cows In 1914.

The distribution of dairy cows indicates the relative importance of various parts of the state with respect to the amount of butterfat available either for farm or for creamery butter-making.

of farm butter was sold to other than consumers or stores, and the price was considerably lower, amounting to only 27.9 cents. The average of prices obtained by farmers from these three types of buyers was 29.8 cents for the year.

TABLE VI. Comparative prices received for farm butter by farmers from different buyers.

Type of Buyer.	Pounds of butter.	Value of butter.	Average price of butter.
Consumer	15,556	$4,745.80	$0.305
Storekeeper	23,159	6,832.71	.295
Other parties	2,240	633.65	.279
All butter sold	40,955	$12,212.16	$0.298

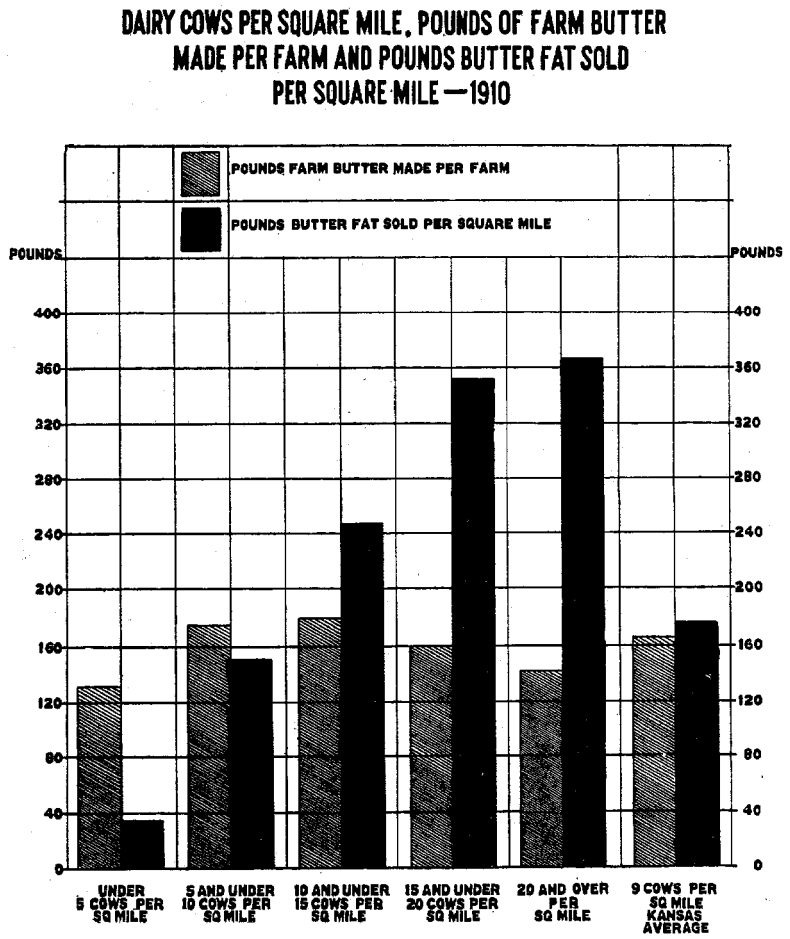


FIG. 10. Relation of Dairy Cows to Farm Butter-making and to Butterfat Sold.

The number of pounds of farm butter made on farms in the groups having different numbers of cows per square mile varies little. As the number of cows increases per square mile the amount of butter made on farms decreases, while the amount of butterfat sold greatly increases. Apparently the more farms the more cows and the more people there are in each square mile the more profitable it becomes for the farmer to sell butterfat instead of making farm butter.

The variation in seasonal prices paid led many farmers to make butter on their farms during periods of high price when they had a quantity of cream too small to sell very conveniently. During the period of low prices for farm butter they considered the selling of cream more profitable than the making of butter. Other reasons besides price were given to justify their procedure; for example, in summer, when the price of farm butter was low, the farmers had much larger quantities of butterfat to dispose of. To have made a larger quantity of butter than usual would have further reduced the price. In addition, extra work would have been necessary to make the increased quantity of butter and sell it to advantage. This extra time could not profitably be spared from the more important crop duties. In discussing this point farmers emphasized that the nature of farm enterprises and their convenience were fully as important reasons as price in determining whether to make butter or sell cream.

PRICES AND QUANTITY OF BUTTER SOLD.

There was found to be a great variation in the prices received by different farmers. Those who sold the larger quantities of butter obtained the higher prices, while those selling the smallest quantities received lower prices, with one exception only. Farmers who sold up-

TABLE VII. Relation of price to quantity of farm butter made and sold.

Type of Patron.	Average pounds of butter sold by farmers giving price.	Average price received.	Per cent of butter paid for in cash.	Per cent of butter paid for in trade.
Make butter to sell; milk 4 cows or more	936.6	$0.312	60.7	39.3
Make butter to sell; milk less than 4 cows	183.0	.264	28.3	71.7
Direct shipment	167.2	.267	.....	100.0
Direct shipment or cream station according to the amount of cream	108.0	.273	23.0	77.0
Cream station for most part	253.8	.276	16.0	84.0
Whole-milk dairymen	780.0	.300	.....	100.0
Local creamery	600.0	.225	.....	100.0
Average of all patrons	399.3	$0.295	45.3	54.7

wards of 900 pounds of butter a year, or more than 18 pounds a week, were handling a large enough enterprise to make a specialty of it. They had developed markets which warranted the production of sufficient butter to enable them profitably to spend the time and enthusiasm necessary to making butter of high quality. For this high-quality butter they obtained 31.2 cents a pound, or over 4.5 cents more than those farmers who sold less than one-fifth as much. Quality of butter, according to the facts given by Kansas farmers, was essential to the gaining of high prices. This quality was directly dependent upon the quantity which a

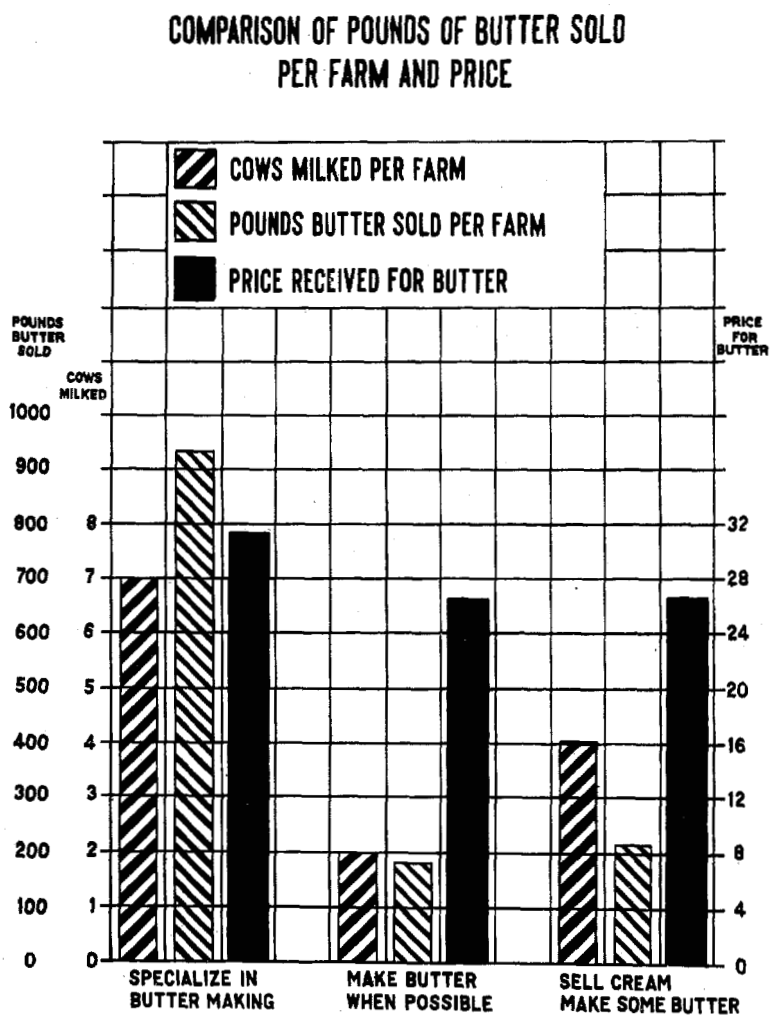


FIG. 11. Relation of Quantity of Butter Sold to Price.

The farmers who were so situated with respect to markets as to sell more than 900 pounds of butter a year, or 18 pounds a week, milked seven cows and received a price of 31.2 cents a pound on the average for a year. They made enough butter to become experts in the turning out of a high-quality product. On the contrary, the farmers who did not specialize in butter-making because they made so little as to have only about 200 pounds to sell in the year, or less than 4 pounds a week, secured only 26.7 cents a pound. The difference of 4.5 cents a pound was the price paid for superior quality. It was the profit which only a specialist could hope to secure.

farmer could profitably make. The farmers who made large amounts of butter were so situated with respect to markets that their butter, no matter how high in quality, could be sold either to consumers directly or to stores at high prices.

It happens that only a small proportion of Kansas farmers are so situated with respect to markets that they could sell enough butter at high prices to enable them profitably to specialize in the farm butter-

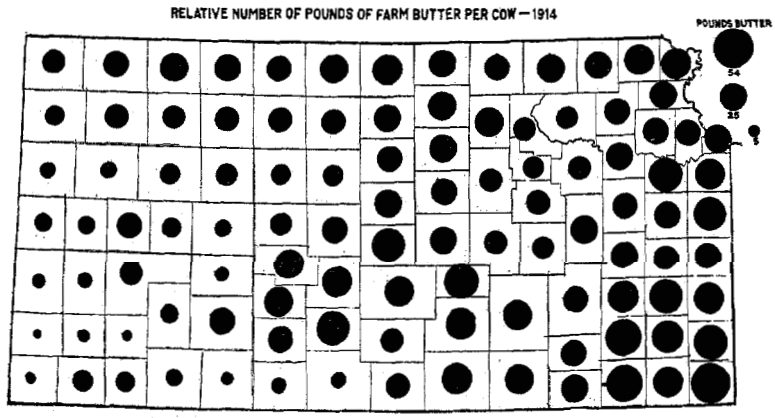


FIG. 12. Pounds of Farm Butter Made Per Cow, 1914.

The size of the dot indicates the amount of farm butter made for each dairy cow in the county. Where the dot is large it shows that farmers believe their markets for farm-made butter are good. Where the dots are small there is relatively less advantage in making farm butter.

making business. Those, however, who are close to good markets and who make some butter, undoubtedly in many cases would make larger profits by further specialization, which would increase the quality and result in better prices.

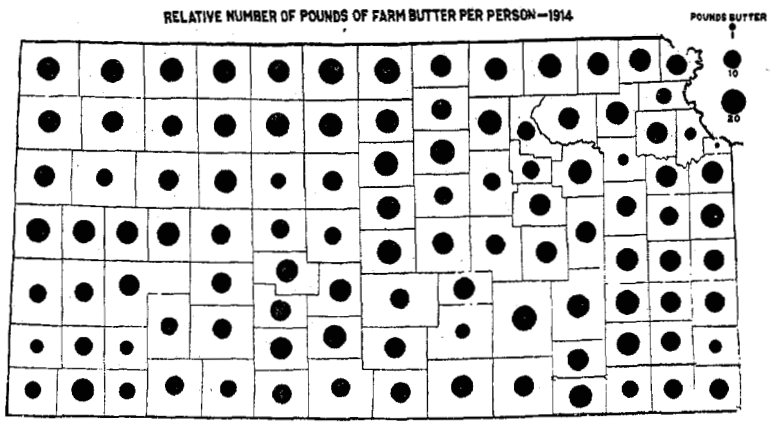


FIG. 13. Pounds of Farm Butter Made Per Person, 1914.

In the counties where the largest amount of farm butter was made per cow, the dots are small for the amount of farm butter made for each person, showing that markets are the essential condition prerequisite to successful specialization in the making of farm butter.

THE COUNTRY STORE AND FARM BUTTER.

More than half of the farm butter which is sold finds its way from the farm to the consumer through the help of the country store. Under present conditions it could not be otherwise. Many farmers have so little butter to sell that they could not afford to take the time required to find the consumers to whom they might sell directly. Often those who do specialize in butter-making feel that the stores pay almost if not fully as much as do the consumers. Consequently they find little inducement for making sales directly to consumers. Selling butter to the store is a convenience which farmers universally seem to insist upon until some other method is proved to be economically more profitable. A trip to the store for provisions is one of the necessary duties performed periodically by some member of the family. Credit at the store also seems to be a relationship between the two parties which is an inducement to continued patronage. The storekeeper who survives knows that volume of sales is one very essential condition of his business, and he is willing to do almost anything to keep up and increase this volume. The farmer naturally desires to purchase his goods at the store which sells to him at the lowest prices and throws in the greatest number of services both willingly and free of charge. It is no wonder then that facts as reported by stores in every part of Kansas reveal conditions which are not wholly ideal either from the standpoint of net profit to the farmer or profitable and efficient business by the store.

TABLE VIII. Quantity of farm and creamery butter handled by 178 Kansas stores, 1915-1916

STORES HANDLING—	Number of stores.	Pounds of farm butter.	Average number of pounds per store.	Pounds of creamery butter.	Average number of pounds per store.
Farm butter	178	459,275	2,580	.....	.....
Farm butter only	75	160,810	2,144	.....	.....
Farm and creamery butter	78	251,475	3,224	98,845	1,203

Out of a total of 194 reporting stores, located in 85 counties of the state, 180 stores handled farm butter. Seventy-five stores handling farm butter only, and 78 stores handling both farm and creamery butter, gave complete data requested.

The store facilities for handling butter were seriously inadequate. One hundred fifty-seven stores gave descriptions of their facilities as follows: No facilities, 64 stores; common refrigerators, 38; ice chest, 24; cellar, 12; tubs only, 7; candy pails, 6; butter stand, 1; barrel, 1; stone jars, 1; cold room, 1; and cold storage, 1. Butter delivered to a store immediately after being made is not always of the best flavor. Too often it is slightly rancid when first made because the bacteria which make the flavor have not been properly controlled. When this butter arrives at the store in all grades and flavors, and is kept, until sold to the consumer, under conditions which neither cool it nor protect it from undesirable odors, it is not surprising that often relatively poor prices are paid.

Practically all of the farmers deliver butter to the stores once or twice a week. Of 169 stores giving information on this point 122 stores reported that their butter-selling customers brought butter to them once a week, 32 that customers brought butter twice a week, while only two stores had customers delivering three times weekly, and but three stores had farmers bringing their butter daily.

Almost half of the stores paid for butter both in cash and trade. Of 178 stores reporting, 87 paid either in cash or in trade, 72 paid in trade only, while the small number of 19 paid in cash only for their farm butter purchases.

The prices paid for farm butter by stores varied according to the location of the town and the type of sale whether cash or trade. One hundred and twenty-nine stores sold farm butter at prices ranging from 2 to 16 cents below the current retail prices for creamery butter. The number of stores selling at given prices were as follows:

Number of cents difference between farm butter and creamery butter prices to consumers.	Number of stores selling butter on this basis.
5 cents	48
10 cents	31
2 to 5 cents	15
5 to 10 cents	27
10 to 15 cents	8

The average difference in prices charged to consumers for creamery and for farm butter was 7 cents. Creamery butter cost the consumer 35 cents a pound in Kansas and farm butter approximately 28. The usual practice in paying for butter in trade was to give approximately the price which consumers paid, while the custom in fixing a cash price was to reduce the trade price by 2 cents. The average cash price paid to farmers was therefore 26 cents and the average trade price 28 cents. This difference of two cents in favor of trade acted as a premium to induce farmers to pay their credit bills at the store. It also served to hold the farmers' trade and thereby to increase the volume of the storekeeper's business. Incidentally, the farmer's desire to dispose conveniently of his surplus farm butter and to run indefinite credit accounts with the storekeeper forced the stores to accept poor butter at a price which was above what its quality would justify. The storekeeper continues this practice in order to hold his customers, and only by uniform standards of competition can the practice be overcome.

Storekeepers are therefore obliged to buy butter of such low quality that it is unsalable on the local consumers' market. Before consumers are willing to buy this low-grade butter it has to be purified and the undesirable odors and flavors removed so far as possible. The renovating process is the only practicable method of profitably bringing about this change in quality. Consequently stores are obliged to sell farm butter, for which they paid a first-grade price, to renovators at such prices as they can afford to pay. During the period of investigation the average price paid to stores in Kansas for more than 4,000,000 pounds of this grade of butter, called packing stock, was 20 cents a pound. Fig. 14 gives a comparison of the buying and selling prices of farm butter, show-

ing that little more than two-thirds of the butter was fit for immediate purchase by consumers, and that almost one-third was therefore sold to renovators. This butter was so reduced in selling price that the stores had a loss of 2.7 cents on each pound of farm butter handled.

During recent years the more businesslike storekeepers of the state have been attempting to grade farm butter. Although very little has been accomplished, nevertheless out of 176 reports, 115 stores said they were paying different prices for different grades of butter, while 54 were not. Seven stores made a difference at times. The importance of buying farm butter according to its quality, not only as a business precaution but also as a basis of rewarding the painstaking farmer according to his

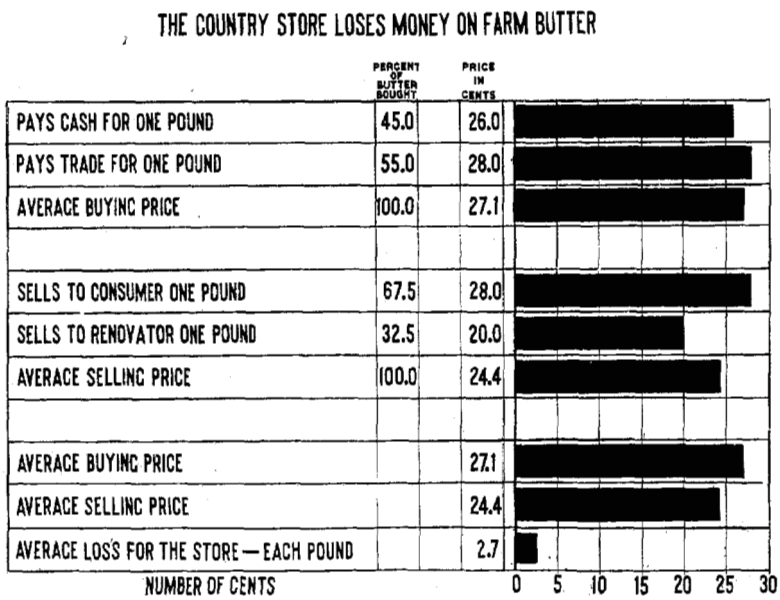


FIG. 14. The Country Store Loses Money on Farm Butter.

One hundred eighty country stores that received 460,000 pounds of farm butter of all grades, good, bad and indifferent, from farmers, paid either cash or trade for the butter, averaging a price of 27.1 cents a pound. They sold the butter of good quality to consumers locally, while the poor butter could not be disposed of except to renovators, and although the renovators paid all the butter was worth, it brought only 20 cents a pound. The average selling price of the butter was thus cut down, so that the stores lost 2.7 cents on each pound. Neither farmers nor stores find it profitable to handle low-grade butter.

efforts in producing quality, is being realized more and more by storekeepers. The practice will become general whenever both farmers and storekeepers cooperate to stop the leak which causes both losses to the store and lower prices and profits to the farmer.

The quantity of farm butter handled by the average store is not large. One hundred and seventy-eight stores, receiving a total of 459,275 pounds during the year, handled 2580 pounds apiece. Of this number the 78 stores which sold both farm and creamery butter averaged 3224 pounds from farms and 1203 pounds from creameries, or a total of 4427 pounds.

TABLE IX. Disposal of farm and creamery butter by 178 Kansas stores, 1915-1916.

Stores Handling.	Number of stores.	Total number of pounds of farm butter.	Average number of pounds per store.	Farm butter sold locally.		Farm butter shipped.		Creamery butter shipped in to satisfy local demand.	
				Total number of pounds.	Average number of pounds per store.	Total number of pounds.	Average number of pounds per store.	Total number of pounds.	Average number of pounds per store.
Farm butter	132	331,710	2,513	184,788	1,400	146,922	1,113	.....	.....
Farm butter	46	127,565	2,773	127,565	2,773	.....	.....	.....	.....
Farm and creamery butter	54	165,400	3,026	115,192	2,133	48,208	893	65,415	1,211

The 75 stores which handled farm butter only averaged 2144 pounds each, or less than one-half as much.

Of the total 459,275 pounds of farm butter received by 178 stores, 313,353 pounds, or approximately two-thirds, were sold locally, while the remaining 146,922 pounds went eventually to renovators. Forty-six stores were fortunate in being able to sell locally all of the butter received from farmers. They handled more than the average amount of butter, indicating that special market demands enabled them to avoid shipping some part of their butter receipts. One hundred and thirty-two stores which shipped some butter sold locally 1400 pounds, while 1113 pounds was shipped, indicating that local markets were probably too small to consume all of the butter of suitable grade, and that for lack of a better method the surplus was sold as packing stock.

The stores which handled both farm and creamery butter indicated that where farmers were making too small a quantity of butter to satisfy local demands, a large proportion of the farm butter was of a grade too low for immediate use by consumers. Consequently the 54 stores were forced to ship to renovators 893 pounds out of the average of 3026 pounds of farm butter purchased. In return they had to ship in 1211 pounds of creamery butter to satisfy the local demand for butter of a high quality. The duplication in railroad shipment, besides the loss to farmers and the higher prices to consumers, was largely made necessary because certain farmers had produced farm butter of low instead of high quality. An opportunity was offered by these towns for improvement in butter-making and higher profits, which was not being fully realized by the farmers.

The forces which have been causing a decline in butter-making by Kansas farmers are not hard to read. Butter-making as a side line does not result in the quality which consumers demand. Few localities provide the conditions under which a farmer can specialize in farm butter-making, so that the number of cows he milks and the quantity of butter turned out will enable him to obtain as high profits as he can secure from other lines of farming. Under these conditions the majority of farmers are limited to the milking of a few cows as a side line and to disposing of the butterfat in whatever manner proves most adapted to their individual conditions of farming. In a large proportion of cases this proves to be butter-making for home use only. In many other cases, selling the small quantity of surplus butter is a means of obtaining cash or goods for a product which would otherwise not be made. The great mass of Kansas farmers find it convenient and profitable to sell butterfat rather than to make farm butter to sell.

CREAMERY BUTTER.

QUANTITY OF BUTTERFAT AND DISTANCE TO CREAMERIES.

To the farmer who produces butterfat to sell, the question of where and how to sell it naturally is of interest. Economic conditions, however, and not individual notions are the safest guide as to what kind of markets one should desire. Kansas has experimented with fully four methods of providing markets for butterfat. The cooperative whole-

milk creamery, the private local creamery, and the private skimming station centralizer system were each tried and found wanting. The present centralizer system has been advancing both the profitableness and the popularity of dairying in the state. Its success has been due to its adaptation to Kansas conditions.

In 1909 the average Kansas farmer owned four cows, which he milked in season. They supplied him with a quantity of dairy products, which provided the milk and cream for home use; the butterfat for making 166 pounds of farm butter, more than half of which was consumed on the farm; and further provided him with 82 pounds of butterfat to sell. The lowest average amount of butterfat sold was 49 pounds for each farm during the year, and the highest only 89. The number of farms in each square mile varied from .75 farms to 5.9 farms. Consequently the number of pounds of butterfat which was sold by farmers varied from 35.6 pounds to 366.3 pounds in each square mile. Four-fifths of the state had less than an average of eight cows per square mile, and the

TABLE X. Relative number of cows per square mile and of butterfat sold per square mile.

Counties Grouped According to Number of Cows Per Square Mile.	Cows per square mile.	Percent of area of Kansas.	Pounds of butterfat sold per farm.	Pounds of butterfat sold per week. per farm.	Pounds of butterfat sold per square mile.	Pounds of butterfat sold per 100 square miles.
Under 5 cows per square mile.....	2.6	29.7	49	.9	35.6	3,560
5 cows and under 10 cows per square mile..	7.5	25.4	85	1.6	151.6	15,160
10 cows and under 15 cows per square mile..	12.1	28.5	85	1.6	247.4	24,740
15 cows and under 20 cows per square mile..	16.7	14.4	89	1.7	352.2	35,220
20 cows or more per square mile.....	21.1	2.0	74	1.4	366.3	36,630
Kansas average.....	9.0	100.0	82	1.6	177.5	17,750

farmers of this large proportion of the state were therefore enabled to sell something less than 200 pounds of butterfat for each section. The farmers of one-fifth of the state, where there was an average of almost 18 cows per square mile, did not produce enough butterfat to sell 400 pounds for each section of land.

These facts are full of meaning, because the average amount of butterfat sold for each square mile determines the amount that will be available within a certain territory. The average distance which farmers drive to town is about five miles. It is therefore the distance, on an average, that a creamery could be expected to draw its supply of butterfat when farmers desire to deliver it themselves. The history of creamery experience in Kansas shows that 40,000 pounds of butterfat or less is not a large enough quantity to enable a creamery to become successful. In other words, if a creamery obtaining all its butterfat locally from a radius of five miles, or an area of 100 square miles, receives only

40,000 pounds, the costs of making and selling butter will be so high that it can not pay satisfactory prices to farmers. In the states where small creameries are a real success not less than 80,000 pounds of butterfat are required, and it has been found that this quantity must be secured within an area of 100 square miles. The very highest producing sections in Kansas in 1909 did not sell half of the quantity of butterfat necessary as a minimum requirement for successful local creameries.

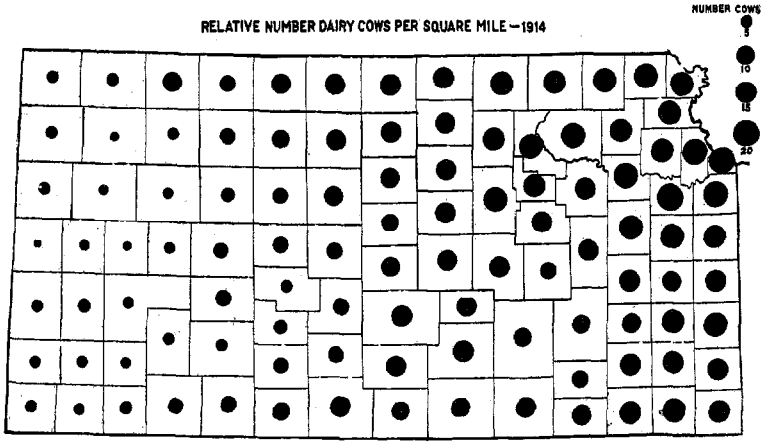


FIG. 15. Relative Number of Dairy Cows Per Square Mile, 1914.
Relatively few counties in Kansas have an average of more than 20 cows in each square mile. Four-fifths of the state averages 9 1/2 cows, while the other fifth averages 22 cows per square mile.

During the period from 1909 to 1915 the increase of 225,174 dairy cows in Kansas was distributed over the state in such a manner as not to increase materially the amount of butterfat per square mile which was sold to creameries. About 38 per cent of the new cows were added

TABLE XI. Changes effected by the increased number of dairy cows in Kansas, 1909 to 1915.

Counties Grouped According to Range in Number of Cows, 1909.	Number of counties.	Area of group.	Percent of Kansas area.	Number of dairy cows.		Number of dairy cows per square mile.	
				1909.	1915.	1909.	1915.
Under 5 cows per square mile..	28	24,435	29.75	64,789	150,798	2.6	6.2
5 cows and under 10 cows per square mile.....	24	20,876	25.42	155,699	221,930	7.5	10.6
10 cows and under 15 cows per square mile.....	30	23,367	28.45	282,958	285,671	12.1	12.2
15 cows and under 20 cows per square mile.....	19	11,813	14.38	197,744	269,430	16.7	22.8
20 cows and under 25 cows per square mile.....	4	1,653	2.00	34,917	33,452	21.1	20.2
Kansas average.....	105	82,144	100.00	736,107	961,281	9.0	11.7

to counties having less than 5 cows in each square mile, changing the number from an average of 2.6 cows to 6.2. Approximately 30 percent of the increase occurred in counties having from 5 to 10 cows per square

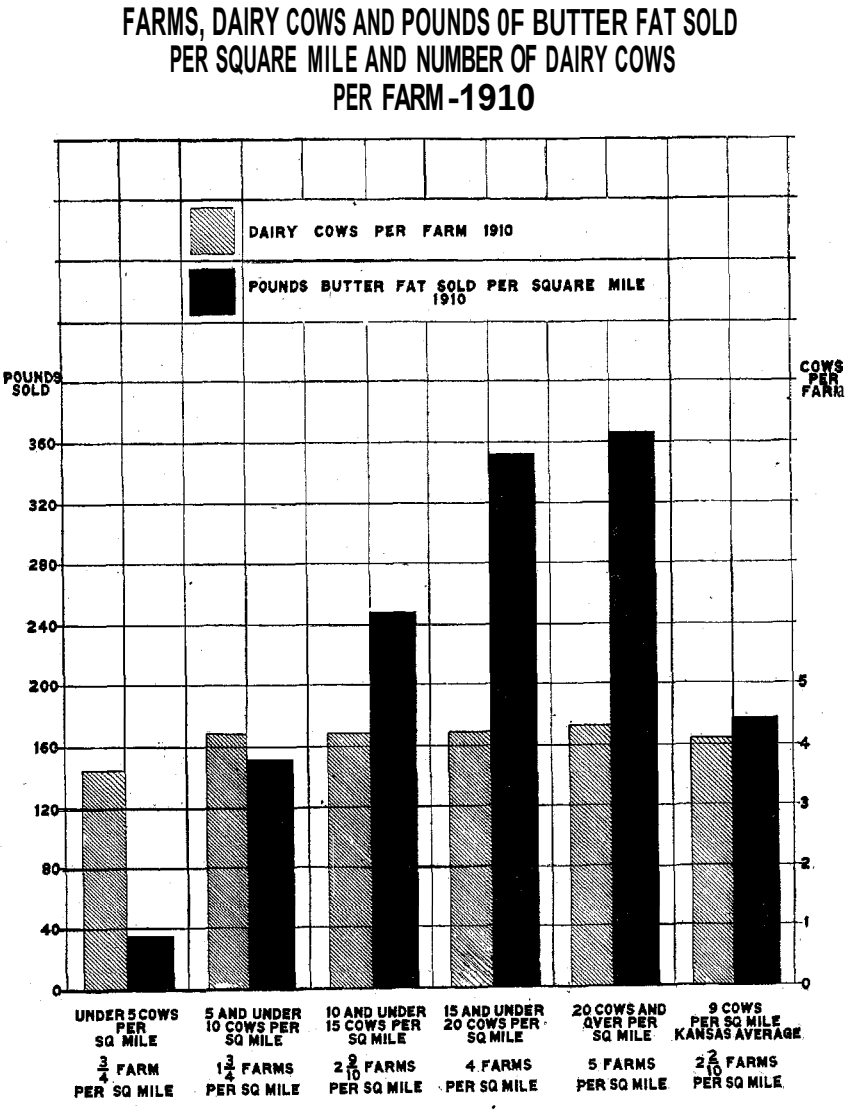


FIG. 16. Farms, Dairy Cows and Pounds of Butterfat Sold Per Square Mile, and Number of Dairy Cows Per Farm, 1910.

When Kansas is divided up into groups of counties, according to the number of cows per square mile, as indicated in the chart, there is very little variation from an average of four cows for each farm, but there is a large difference of from three-fourths to five farms per square mile. The variation in the number of pounds of butterfat sold per square mile in Kansas is due not so much to a difference in the number or quality of the cows kept on each farm as it is to the difference in the number of farms in a square mile. This indicates that dairying is decidedly a side issue with most Kansas farmers.

mile. The new cows increased the average of this group from 7.5 to only 10.6 cows on each section. The remaining 32 percent of the increase took place in counties which had from 15 to 20 cows per square mile and changed the average from 16.7 to 22.5 cows. The greatest amount of butterfat sold per square mile in 1909 was 366.3 pounds, where the cows averaged 21.1. The increase of 1.4 cows per square mile above this number could not be expected to enhance the quantity of butterfat suffciently to provide an adequate amount of raw material in any hundred square miles to make possible successful local creameries.

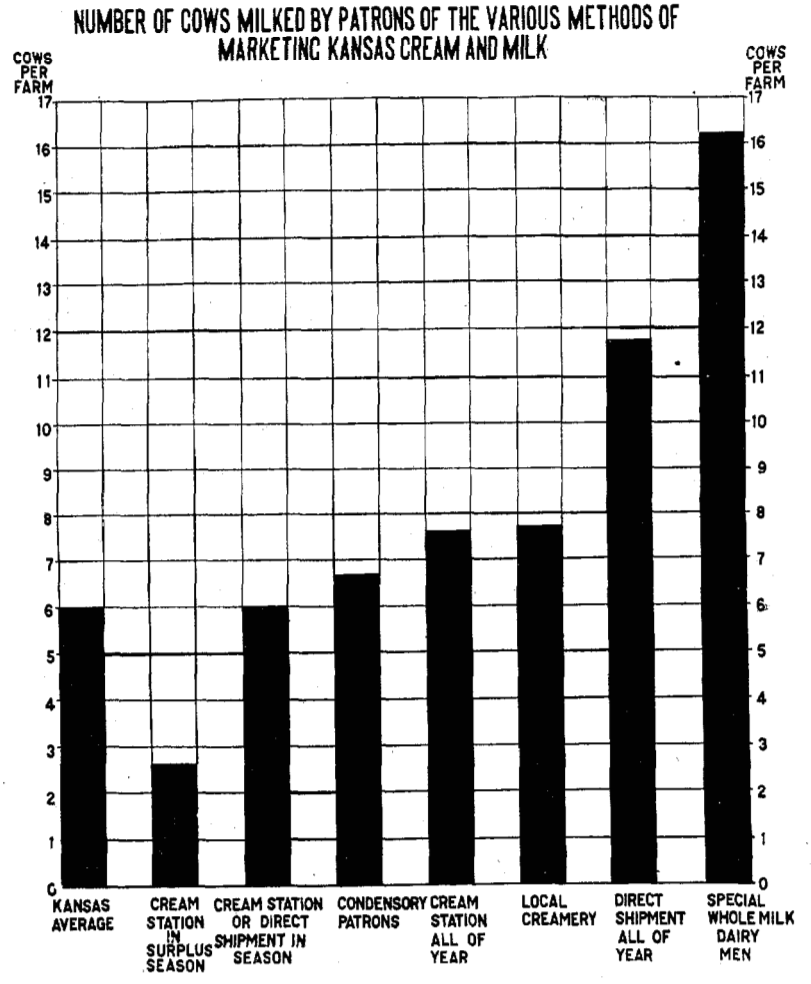


FIG. 17. Relation of Number of Cows Milked to Marketing Methods.

The number of cows milked by farmers in Kansas varies greatly. According to the number of cows milked, and consequently the amount of butterfat which farmers have to sell at a given time, they patronize some one of the methods of marketing dairy products indicated in the chart. Since most farmers milk only about four cows, the economic necessity of the cream station is proved by the actual experience of Kansas farmers.

The increased number of dairy cows changed the average number per square mile in over four-fifths of the state from less than 8 to 9 1/2, while over the other fifth of the state the increase was from less than 18 to 22 1/2 cows.

Kansas farmers not only produced a small quantity of butterfat in any given territory of the state, but their mode of production made it a side line instead of a main enterprise of the farm organization. Regardless of the number of cows per square mile, whether they were the lowest or the highest number as shown in Fig. 16, the number of cows kept on each farm averaged approximately the same, namely, four or slightly above. Where the farms were small more butterfat was sold than where farms were large, indicating that cows were milked chiefly for home use, and whatever surplus existed was disposed of according to the most convenient method at hand.

The facts shown in Fig. 17, furnished by farmers living in four-fifths of the counties of the state, show why there are different methods for making the transfer of butterfat from the farms to creameries. The

TABLE XII. Distance patrons of the different methods of marketing butterfat and milk live from town, cream station and creamery and average number of cows milked.

TYPE OF PATRON.	Average distance from farm to town, in miles.	Average distance from farm to a cream station, in miles.	Average distance from farm to a creamery, in miles.	Average number of cows milked.
Special whole-milk dairymen	2.7	1.5	3.2	16.2
Direct shipment always	4.4	3.7	23.0	11.7
Local creamery always	4.8	4.2	5.0	7.7
Cream station always	4.3	4.2	17.5	7.6
Condensary	3.9	.....	3.7	6.6
According to amount of fat—direct shipment or cream station	4.6	4.6	19.0	6.0
When have enough cream—cream station	4.0	7.5	28.7	2.6
Make butter to sell	5.1	4.9	20.1	4.1
Average of all patrons	4.6	4.6	19.0	6.5

farmers who delivered milk or cream to local creameries, condensaries and consumers in town lived only 4.4 miles, on an average, from a creamery. On the other hand, those who sold cream either to a cream station or by shipping direct to a creamery lived 21.1 miles from a creamery. Farmers who made butter to sell lived 20.3 miles from a creamery but only 4.9 miles from town. In Table XII other comparisons may be made. It becomes perfectly evident that Kansas conditions do not warrant the operation of a sufficient number of successful creameries to enable farmers to deliver their butterfat direct by driving to town. Consequently if they were to continue milking their few cows and disposing of their small quantities of butterfat some method of shipment was absolutely necessary. The fact that farmers with the larger average

number of cows ship direct to creameries at all times, while those with fewer cows patronize the cream stations, should be ample proof that the procedure is due to their own choice as to which method meets most nearly their own individual ideas of convenience and profit. There should be no quarrel or misunderstanding concerning this fact. It stands to reason that a farmer selling an average quantity of butterfat of less than 100 pounds a year, or less than 2 pounds a week, could not possibly afford to ship the cream by himself. The smallest can used for shipping holds five gallons of cream, or an average of about 15 or 16 pounds of butterfat. The lowest express charge made for shipping this size of can a distance of 25 miles or less is 12 cents. For the average farmer to ship direct, conditions would require him to do one of two things — either to pay 6 cents a pound butterfat in transportation charges each week on his 2 pounds, or else save the cream for seven or eight

TABLE XIII. Relative sizes of centralizer and local creameries in Kansas.

	Number of creameries.	Total pounds of butter made.	Average size of creamery.
ALL CREAMERIES	78	24,274,993	311,218
Size of group:			
1,000,000 pounds and over	9	17,573,005	1,952,556
Under 1,000,000 pounds	69	6,701,988	97,130
100,000 pounds and under 1,000,000	17	4,895,498	287,970
Under 100,000 pounds	52	1,806,490	34,740
CENTRALIZER CREAMERIES	41	23,125,821	564,044
Size of group:			
100,000 pounds and over	25	22,366,022	894,641
Under 100,000 pounds	16	759,799	47,487
LOCAL CREAMERIES	37	1,149,172	31,058
Size of group:			
100,000 pounds and over	1	102,481	102,481
Under 100,000 pounds	36	1,046,691	29,075
50,000 pounds and over	9	633,133	70,348
Under 50,000 pounds	28	516,039	18,450

weeks and then ship it. In the first case the cost would be unbearably high and in the second the quality of the cream would be unfit for sale. The very idea itself is impracticable. The statement of conditions proves that unless some method of concentrating small quantities of butterfat at a local shipping point is followed it would prevent the profitable marketing of butterfat by the average Kansas farmer.

The only adequate method so far devised for enabling the farmer to dispose of a small quantity of butterfat under these conditions is the cream station. Farmers who have enough cream to ship direct are doing so. Every creamery in the state receives cream directly from such farmers. The only fault which one would find is that there are too few farmers producing sufficient butterfat to make it worth their while to ship direct.

THE KANSAS CREAMERY SYSTEM.

In 1915 there were 78 creameries operating in Kansas and 24,274,993 pounds of butter were made by them. More than half of these creameries, 41, were centralizers, which made 23,125,821 pounds of butter, or over 95 percent of the total. Thirty-seven local creameries made only 1,806,490 pounds. The average creamery output of the state was 311,218 pounds, of centralizers 564,044 pounds, and of locals only 31,058 pounds. Only one local creamery made 100,000 pounds or more of butter, while 25 centralizers were in this class. Sixteen centralizers and 36 local creameries made less than 100,000 pounds of butter each, the former averaging 47,487 pounds and the latter but 29,075. Judged by the standard of successful small creameries in other states, these concerns are too small to be considered truly specialized successful creameries. Either they are conducted as one enterprise of a produce business, candy kitchen or similar joint undertaking, or else they are not well enough established to be examined critically. Many of them are survivals of the old at-

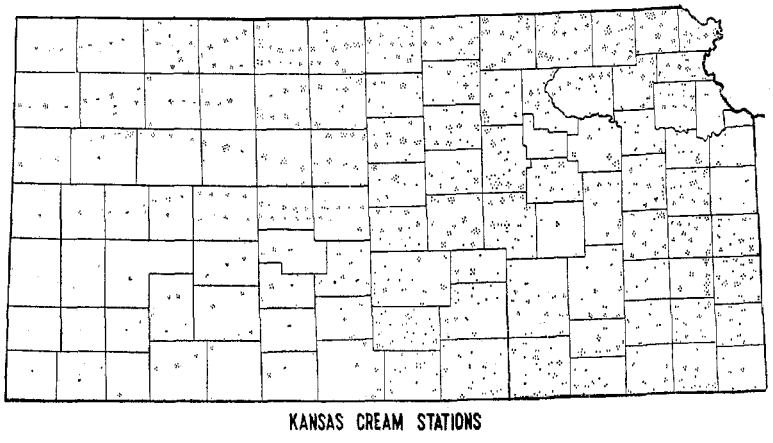


FIG. 18. Kansas Cream Stations, 1916.

In 1915 there were 2020 cream stations located in 851 towns in Kansas. Some towns had as high as five or six stations, while many others had only one. The average number of stations was from two to three in each town. Each town, on an average, shipped about 20,000 pounds of butterfat, or approximately 8000 pounds per station. The number of stations shipping cream to creameries located in Kansas was 1532, to Colorado 120, to Missouri 169, and to Nebraska 199.

tempts at operating local creameries. It is noteworthy that not more than 37 out of the original 500 continue to exist.

Of the total 78 creameries, 26, or one third, may be classed as specialized and truly successful concerns. One of these is a local plant to which farmers bring their cream. The others are typical centralizers, making from upwards of 100,000 pounds to more than 5,000,000 pounds of butter. They received cream for the most part from cream stations, although most of them received from 7 to 25 percent of their purchases of butterfat from farmers who shipped direct. The centralizer system of Kansas, therefore, combines the two methods of concentrating butterfat,

known as the cream-station system and the direct-shipment system. Nothing that might be said one way or the other would change the fact that each method has its place, because of its adaptation to Kansas conditions in performing necessary economic functions.

There were 2020 cream stations, shipping cream from 851 different towns, in 1915. The average amount of butterfat shipped from each town was approximately 20,000 pounds. Since each town had on an average of from two to three stations, 8000 pounds was close to the volume handled by each one. In numerous towns, as shown by the groups of dots in Fig. 18, there were as many as six and eight stations, while still other towns had but one. Competition in the buying of butterfat is extremely intense, and a town situated in a good dairy section which has not a full quota of stations is a rare thing. Often it would seem that there are too many stations in given towns. At the present time, however, with farmers feeling as they do, that only by keen competition will fair prices be paid, it would be difficult to have conditions otherwise. The wastes of overcompetition are fully realized by large creamery organizations, but they are not so well understood by the great mass of producers. Not until producers generally understand the wastes of competition can a scientific and economic method, adapted to the forces that make necessary these wastes, be put into successful operation.

Destination of cream shipments is determined by interesting and very important conditions. The ownership of cream stations, of course, fixes the destination of shipments, once the farmer has disposed of his butterfat. In towns where there is but a single station and where there are no individual direct shippers the problem rests upon the ownership of the station only. If it belongs to a creamery all receipts will go to the central plant, which may be located anywhere from a few up to 400 or more miles distant. In case the station is independently operated by private cream buyers or by cooperative farmers' concerns, competitive conditions govern the shipments of cream just the same as for direct shippers. The price quoted for butterfat delivered at the station of the receiving creamery is the first and most appealing condition to the casual observer; but to the practical cream shipper this price is merely a starting point. When butterfat is graded and purchased at prices varying according to the grade of butter which can be made from it, the facts concerning the speed of transit from shipping point to destination become of importance second only to price. Delays on account of transfers, stopovers between trains and other delays of various kinds usually reduce the quality of the cream to an extent which reduces the commercial value. The question then becomes one of determining whether the loss in quality resulting in a reduction of price is more or less than the cost of shipping a longer distance over a direct route where no delays are occasioned.

Under existing conditions different markets pay varying prices for the same grade of butter. When a creamery locates itself in a consuming center where prices are higher than elsewhere it is often possible to quote higher delivered prices for butterfat than some other

TABLE XIV. Number of Kansas cream stations with destination of shipment.

Kansas County to Which Cream is Shipped.	Number of stations shipping.	Number of counties shipping.
Allen	7	4
Atchison	24	10
Barton	129	35
Bourbon	20	7
Clay	131	41
Cloud	148	41
Coffey	4	3
Cowley	68	12
Crawford	4	2
Dickinson	105	37
Douglas	4	2
Elk	7	3
Franklin	22	6
Geary	50	26
Harvey	10	7
Labette	63	20
McPherson	8	6
Montgomery	5	2
Morris	19	10
Osage	2	1
Reno	145	47
Sedgwick	19	9
Shawnee	314	89
Wilson	1	1
Wyandotte	5	2
Total stations	1,314	.....
Other Destinations.		
Denver county, Colo	89	28
El Paso county, Colo	23	15
Pueblo county, Colo	8	8
Jackson county, Mo	153	36
Other Missouri points	16	12
Douglas county, Neb	116	32
Gage county, Neb	56	9
Lancaster county, Neb	18	8
Saline county, Neb	9	6
Total stations	488	.....
Miscellaneous	206	.....
Cooperative stations	12	.....
Grand total, stations	2,020	.....

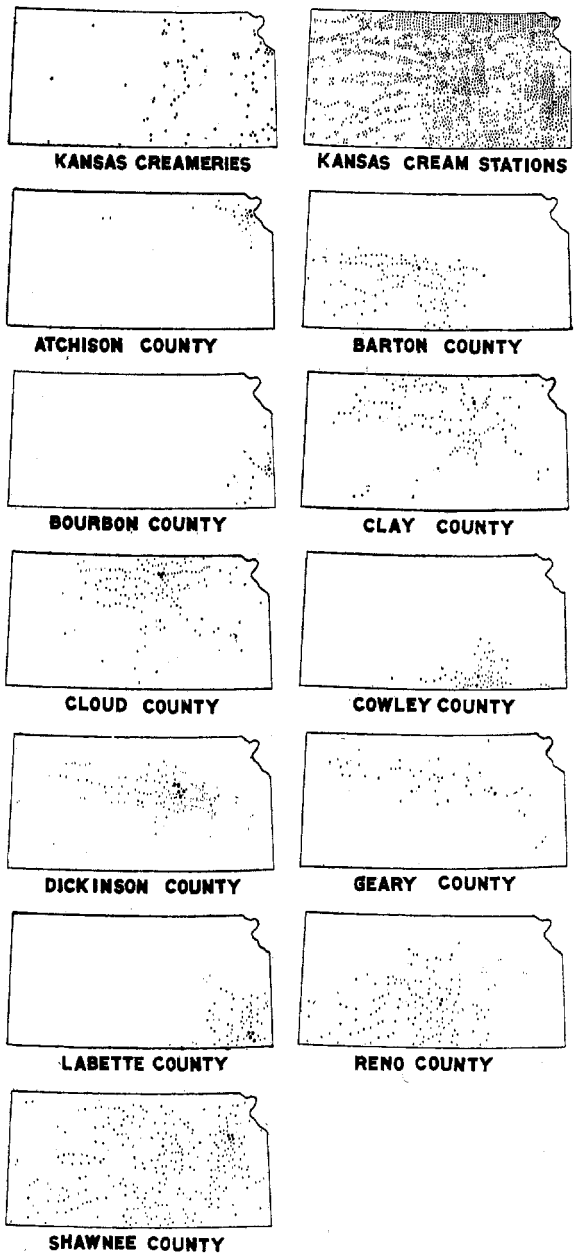


FIG. 19. Cream Stations Shipping to Creameries in Counties Named.

The extent of territory from which it is necessary to draw butterfat in order to insure a volume of fat great enough to keep manufacturing costs low and to enable efficiency in the shipment and sale of butter is indicated by the eleven maps showing the number and distribution of stations shipping to the creameries within the county named.

creamery which sells its butter at a lower price. On the other hand, a creamery may be able to accept lower prices for its butter, and because of having a very low cost of making and marketing, still pay fully as high or even higher net prices to farmers than can its competitors. There is no simple explanation adequate to give an understanding of a problem which is so intricate and complicated as this one of destination for cream shipments. As long as cream buying is not carried out on a uniform scientific basis where the territory is divided into zones with respect to the most efficient creameries, the individual farmer or cream shipper must solve the problem himself on the basis of relationships existing between the distance, the rate, the quality of product at time of delivery, and the delivered price.

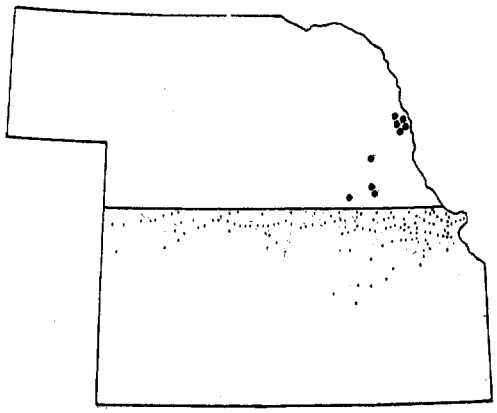
Creameries in Kansas, Colorado, Missouri and Nebraska made 33,641,821 pounds of butter from butterfat produced by Kansas farmers during the year in which this study took place. The major part of this butter was made from butterfat shipped to creameries by the 2020 stations within the state. Of these stations, 1532 sold cream to creameries in Kansas, 120 to those in Colorado, 169 to those in Missouri and 199 to creameries in Nebraska. From Kansas cream, reaching creameries through delivery by farmers themselves, by direct shipment and by cream-station shipment, creameries in Kansas made 24,274,993 pounds of butter, those in Colorado 1,180,282 pounds, in Missouri 4,080,949, and in Nebraska 4,105,597 pounds.

Kansas creameries received approximately 19.6 million pounds of butterfat in the year. To 37 local creameries farmers delivered about 900,000 pounds of butterfat. The 41 centralizers, receiving 18.6 million pounds of butterfat, bought, not only from farmers who delivered at the door, but also from direct shippers, and through cream stations. Approximately 3.7 million pounds, or one-fifth of the total, represented the combined quantities of fat from farmers who delivered and shipped direct. Stations supplied 14.9 million pounds, or four-fifths of the butterfat.

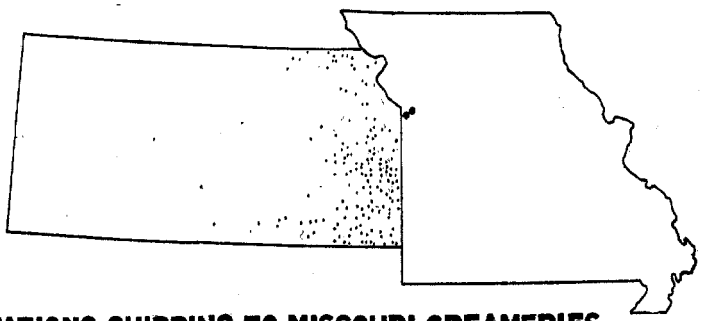
THE FUNCTIONS OF CENTRALIZERS.

Undoubtedly the secret for the widespread enthusiasm for the local creamery is the fact that more dairymen have had intimate relations with the one than with the other. More reliable facts have been circulated about local creameries than centralizers. Consequently comparisons of the two have been made without ample facts. It has been assumed that economic conditions were the same in both centralizer and in local creamery territory, and, moreover, that the two types of creamery performed the same number of functions. Unfortunately neither of these assumptions has been correct and a great deal of needless suspicion has grown up which hinders dairy advancement.

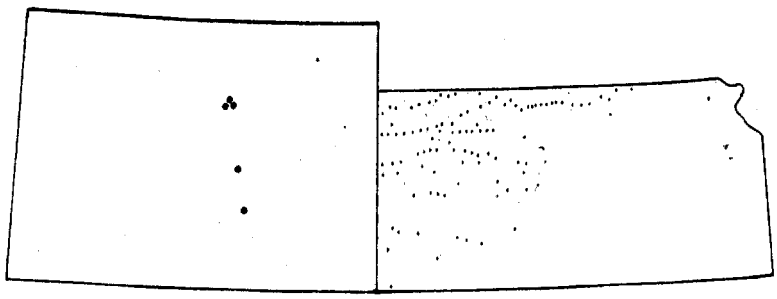
The original whole-milk local creamery had one function only to perform. Milk delivered at the creamery door by the farmer was separated, the cream made into butter and sent to a commission merchant who attended to the sale of the product. The manager of the local



TO NEBRASKA CREAMERIES



STATIONS SHIPPING TO MISSOURI CREAMERIES



STATIONS SHIPPING TO COLORADO CREAMERIES

FIG. 20. Cream Stations Shipping to Creameries in State Named.

The centralizer often draws butterfat, through the cream-station or direct-shipment system, many hundreds of miles. State lines are overlooked. By interstate shipment competition in the cream business has become not only extensive but very keen. The stations shown ship approximately one-fourth of the Kansas butterfat available for creameries to plants in other states.

creamery was the butter-maker, and since butter-making was the only important operation undertaken by the creamery, this was all that was necessary.

The advent of hand separators on the farms in local creamery sections led farmers to deliver cream rather than whole milk. In time it was found that by regularly alternating one farmer could deliver the cream for several neighbors. Often groups of farmers would cooperate and hire a cream hauler to collect the cream from each farm and deliver it to the creamery. In case the creamery undertook the responsibility of running the cream route the cost was charged to the farmer by paying him less than the regular price by an amount regulated according to the distance of his farm from the creamery. Many local creameries at present pay different prices according to whether the cream is delivered by the farmer or gathered by a creamery-operated route. Obviously they could not do otherwise. To the original single function of making butter

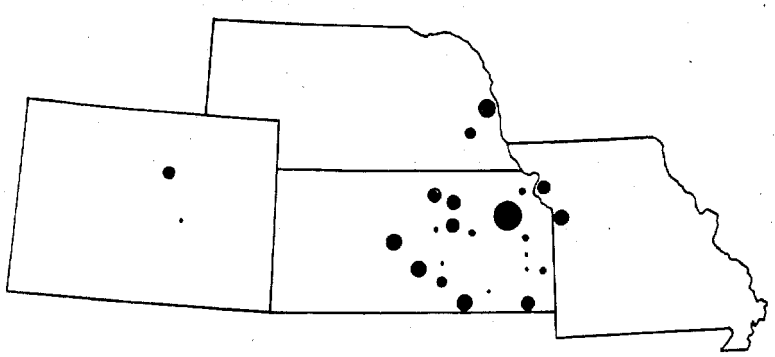


FIG. 21. Relative Creamery Output from Butterfat Produced In Kansas. Each year there are approximately 33.6 million pounds of creamery butter made from butterfat produced in Kansas. Creameries located in Kansas made 24.2 million pounds, in Missouri 4.1 million, in Nebraska 4.1 million, and in Colorado 1.2 million pounds.

only, these creameries have added the service of gathering cream from those farmers who do not see fit to deliver it themselves. Very few of the small local creameries, however, have taken upon themselves the responsibility of selling butter in the consuming markets. Most of their butter is sold in primary markets through the assistance of wholesale receivers.

In contrast to the one and sometimes two functions undertaken by small local creameries, centralizers regularly perform three distinct services. Because early creamery experience in Kansas proved that with dairy farming as a side line too little butterfat was produced by the average farmer to enable him to bring it to the creamery, the creamery had to go to him for it. This was done by creating the cream station, and just as the Wisconsin farmer who uses the creamery-operated cream route pays its cost by accepting a lower price, so also the Kansas farmer who patronizes the cream station pays its cost by accepting a price which is

necessarily lower than the price which the same creamery pays for butterfat delivered to it.

The second function of the centralizer is to make and prepare the butter for shipment. In this respect it has had to devise means of overcoming the lower quality of cream received as compared to the grade of cream received by small creameries. The third function which centralizers perform is that of finding the best buyer instead of trusting to the services of the wholesale receiver. In doing so it is enabled to obtain higher prices for butter, which permit the payment of better prices to farmers than would otherwise be possible.

From the producer's point of view, under the same conditions with respect to the amount of butterfat per square mile for creamery butter purposes, and the carrying on of dairying as a main line by farmers, centralizers have every advantage over local creameries. The increase in quantity of butterfat which would make possible successful local creameries would at the same time reduce the cost of concentration to

TABLE XV. Comparative size of business of centralizers and of local creameries.

Type of Creamery.	Number of creameries.	Approximate average size of investment in dollars.	Approximate average number of patrons.	Average number of active officers.	Average number of employees.	Average number of cream stations.
Centralizer	41	$25,671	1,408	2.0	18.0	33
Local	37	3,948	88	1.8	2.7	None.

Type of Creamery.	Pounds of butter made per patron.	Pounds of butter made per active officer.	Pounds of butter made per employee.	Pounds of butter made per individual on creamery force.	Average number of pound of butter made.
Centralizer	400	282,022	31,336	28,202	564,044
Local	352	17,254	11,503	6,902	31,058

such an extent as still to leave the advantage of ability to pay higher prices with the centralizer. The increased amount of butterfat received by each centralizer would materially reduce the cost of manufacture, and in turn the larger volume of butter to be sold would result in greater efficiency by leading to the development of a more effective distributing branch of the business. In fact, a comparison of the local creamery and the centralizer from an economic standpoint under present competitive conditions must characterize the centralizer as far superior. Centralizers utilize the three fundamental forces that affect their business success, while local creameries make use of one, with infrequent development of the second. The third, or selling function, which from now on must be most important, local creameries usually entirely overlook.

The volume of butter made by individual creameries varies greatly. There are both centralizers and local creameries which handle a volume

of butterfat so small that continuance in the business is only a matter of a short time. More than one-third of the centralizers and three-fourths of the local creameries in Kansas are decidedly within this group of concerns working uphill against the excessive costs caused by a very small volume of business. In comparison to centralizers, local creameries are at a decided disadvantage so far as volume of business is concerned. The information in Table XV proves this from many angles. Local creameries make less than one-fourth as much butter for each person employed, and less than one-sixteenth as much for each managing officer in charge of

TABLE XVI. Comparative prices received for butter by local and centralizer creameries in Kansas, 1915.

BUTTER SOLD BY—	Pounds of butter.	Price of butter.	Number of creameries.	Average amount of butter per creamery.
Centralizers	9,784,719	$0.271883	8	1,223,089
Local creameries	641,676	.265657	13	49,359
All creameries	10,426,395	.271499	21	496,495

the business. The average small creamery, moreover, has only one-sixteenth as many patrons and makes but one-eighteenth as much butter as the average centralizer. These differences largely account for the different costs involved as well as the prices received for butter and paid for butterfat by the two types of creameries.

In 1915 a group of thirteen of the more nearly successful local creameries, making considerably above the average amount of butter for concerns of this type in Kansas, sold their butter for 26.5637 cents a pound, while eight centralizers, selling about fifteen times as much

TABLE XVII. Comparative prices paid for butterfat by local and centralizer creameries in Kansas, 1915.

PLACE OF CREAM DELIVERY BY FARMER.	Pounds of butterfat.	Price of butterfat.	Number of creameries.	Average of butter per creamery.
Creamery door of centralizer	2,572,274	$0.274438	10	257,227
Creamery door of local centralizer	654,735	.257293	13	50,364
Door of cream station	9,728,760	.241701	Stations of 10 creameries.	972,876
All methods	12,955,669	.248590	23	563,290

butter, obtained 27.1883 cents a pound. The local concerns, because of their disadvantages in selling, secured .6246 cents per pound less than centralizers did, Owing to the fact that these small concerns made less than 50,000 pounds of butter and had not considered a careful and detailed accounting system essential to the success of their business, it has been impossible to secure from them information as to the cost of making and marketing butter. No facts are available to show the average cost and profit to the small creamery, and consequently

their ability to pay better prices can not be accurately measured. Inasmuch as centralizers handled more than 95 per cent of the butterfat of the state and came constantly in competition with these small business concerns, the price paid to farmers was undoubtedly as high as they could afford. The actual price paid to farmers by the locals, however, was only 25.7293 cents a pound for butter fat as compared to a price of 27.4438 paid by centralizers to the farmers who delivered cream at their doors. Farmers delivering cream to centralizers obtained 1.7145 cents higher price than did those delivering to local creameries.

A very small proportion of Kansas butterfat, however, was delivered directly by farmers either to local or centralizer concerns. Since the local creameries received all of their fat on the one basis of a delivered price, while the centralizers secured butterfat on two bases, naturally the average price of the former was not comparable to that of the latter. It has been seen that the delivered price paid by centralizers was 1.7 cents higher than that paid by locals. Since small creameries did not reach out beyond their local territory for butterfat, and because there were too few local creameries to provide markets for all farmers having butterfat to sell, these farmers welcomed the opportunity of shipping their butterfat to centralizers at prices which approximately equaled the delivered centralizer price, less the cost of transportation and handling. The farmer living one-half mile from a local creamery pays his cost of transporting butterfat to the creamery by spending the relatively short time required to hitch up and drive that distance and return. The farmer who lives five miles from the same creamery pays a greater cost for delivering his fat because it takes him from eight to ten times as long to make the longer trip. If the first farmer considers his time worth twenty cents an hour and is accustomed to deliver 16 pounds of butterfat each week, his cost of marketing to the local creamery is not less than 1.25 cents a pound. This amount taken from the local creamery delivered price of 25.7293 leaves him a net price of 24.4793. But for the other farmer who lives so far from the creamery that it takes ten times as long to make the trip it costs considerably more.

When farmers live on an average of nineteen miles from a creamery and only five miles from a railroad station or a cream station they are willing to pay the cost of shipping cream, either direct or through cream stations according to their conditions, rather than take time to drive so far. The price paid for butterfat at cream stations, therefore, represents a different thing than the price paid for delivered fat. When the farmer brings his butterfat to the express agent or to the cream station he has only commenced his task of delivering fat to the creamery, while by driving the same distance to a local creamery he has completed delivery. Centralizer patrons have greater costs to pay than local creamery patrons, because they live farther from centralizers than do local creamery patrons from their creameries. When they sell fat to a cream station lower prices are accepted because the cream station bears the expense of handling and transportation. In 1915 the average difference between prices paid by centralizers for butterfat delivered and prices

paid at cream stations was only 3.2737 cents. Contrary to the usual idea, no farmer was compelled to make use of the system. Any farmer was free to ship direct. Those who used the cream station did so because it was relatively a lower cost to pay as compared to some other method which they could have used.

EFFICIENCY OF CENTRALIZERS.

There is no more antagonism between centralizers and local creameries than there is between different centralizers. Competition in the cream-buying and butter-selling business emphasizes the efficiency of business organization. One of the keynotes to efficiency is the volume of product handled. Without the largest possible volume, business organization is handicapped. There are three important phases of the centralizer business, namely, concentration of butterfat, butter-making, and distribution or marketing of the butter. The most efficient organization is the one which not only makes the highest profit but pays the highest prices for butterfat. The efficiency of centralizers depends not upon the absolute cost of making butter nor upon the exact number of cents that it costs to concentrate butterfat, but upon the relationship of total costs to the net price for which the butter is sold. Costs may be high and yet the concern may pay higher prices to farmers and retain larger profits for the concern than do competitors, because the quality of butter made is higher and the method of selling more effective than that of other centralizers. Because these are facts of common knowledge to the enterprising creamery men of the country, the recent tendency almost everywhere has been to increase the size of creameries. Under competitive conditions the rapid growth of the more efficient centralizers tends to reduce the volume of butterfat received by smaller and less efficient centralizers, just as a small centralizer may appear to interfere with the receipts of cream by small local creameries.

When in a group of very efficient centralizers one undertakes to increase the intensity of competition with the hope of permanently enlarging its receipts of butterfat, its method is to increase the price offered to farmers. The advantages of a large centralizer business are so great when it is efficiently organized, as compared to a small local creamery, that it can easily offer a permanent price far above that which a small local creamery could continue to pay. In the competitive struggle between centralizers it is often unavoidable that smaller creameries should be outbid. The conditions which prevent large creameries from bidding against each other their highest legitimate price continue to make possible the operation of inefficient creameries. There are creameries which because of inefficiency make no profit, while others which pay the same prices make very high profits. As long as the inefficient concerns are kept in operation and as long as the variation in the efficiency of creameries remains so great, the more certain it will be that the most efficient will make high profits.

There is nothing alarming in this statement. The efficient centralizer makes the high profit because it obtains high prices for its butter in relation to the total costs of carrying on the business. On the basis of the

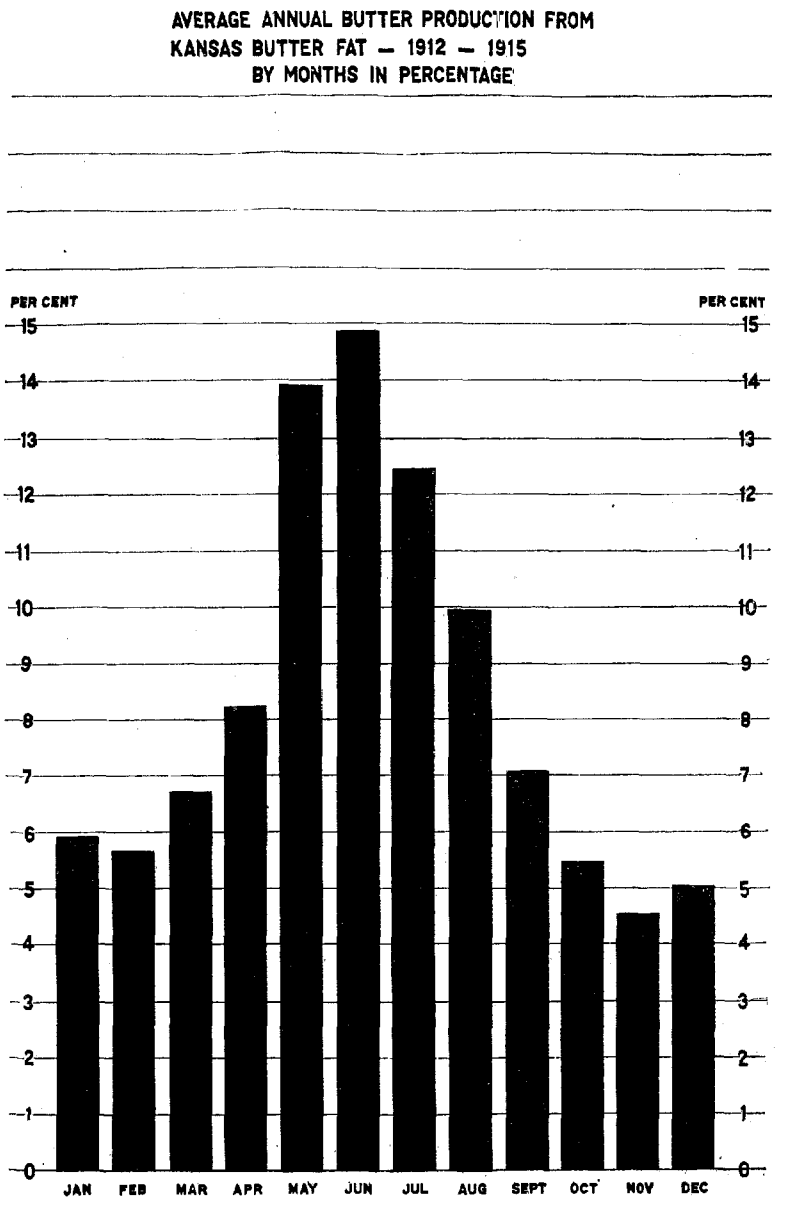


FIG. 22. Variation in Monthly Production of Kansas Creamery Butter.

Butterfat is not produced uniformly by months throughout the year. During May, June, July and August, 51.25 per cent of the butterfat for the year is sent by Kansas farmers to creameries. Stated in another way, more than half of the creamery butter is made in one-third of the year and less than one-half is made in the other two-thirds of the year.

popular idea of competition, no creamery is required to offer the highest price that it could afford to pay, but only that price which its competitors can force it to give. Whatever difference there may be between the price received for butter and the combined expenditure for butterfat and the costs of making and selling is a fairly earned competitive profit, regardless of whether the earning amounts to 5 or 50 percent. Efficient creameries, according to the principles of competition in which most farmers are such firm believers, will not find it desirable to bid higher prices until the poorest creameries doing business improve sufficiently to be able to force the best to pay higher prices on penalty of doing without the butterfat. As it happens, the least efficient creameries in Kansas are local plants which can not improve materially until they increase the volume of butterfat handled. Few of them can do this without be-

TABLE XVIII. Relative monthly butter production from Kansas butterfat, 1912-1915 average

MONTH.	Average pounds of butter made.	Percentage of production by months.
January	1,713,630	5.94
February	1,630,892	5.66
March	1,937,352	6.72
April	2,370,755	8.22
May	4,015,442	13.93
June	4,292,615	14.88
July	3,597,348	12.47
August	2,874,425	9.97
September	2,047,121	7.09
October	1,580,275	5.48
November	1,318,266	4.57
December	1,458,305	5.06
Yearly average	28,836,399	100.00

coming centralizers. Not until the public mind, especially that of the farmers as a class, recognizes the need of vigorously promoting efficiency can these least efficient creameries be effectively induced to improve. It is a most fortunate thing for Kansas butterfat producers that more than three-fourths of the butterfat of the state is handled by the most efficient group of creameries. The regrettable feature lies in the fact that there are so many inefficient creameries either to be improved or put out of business before a higher level of price competition can be permanently brought about.

BUTTER PRICES.

Creameries in Kansas received, on an average of four year's statistics, 51.5 percent of their years' purchases of butterfat in one-third of the year, during the months of May, June, July and August. The extreme

production of butter in these four months is shown in Fig. 22. In each of May and June more than three times as much butter was made as in November. Less than half the annual production was turned out during two-thirds of the year, The variation in production of butterfat is more extreme in Kansas than in Wisconsin or other states where dairying is a main-line enterprise. In spite of the monthly fluctuation in receipts, the prices of butter remained comparatively constant. (See Fig. 23.) Creameries habitually paid prices for butterfat that changed approximately in proportion to the changes in prices received for the butter. The cost of doing business being relatively stable, creameries

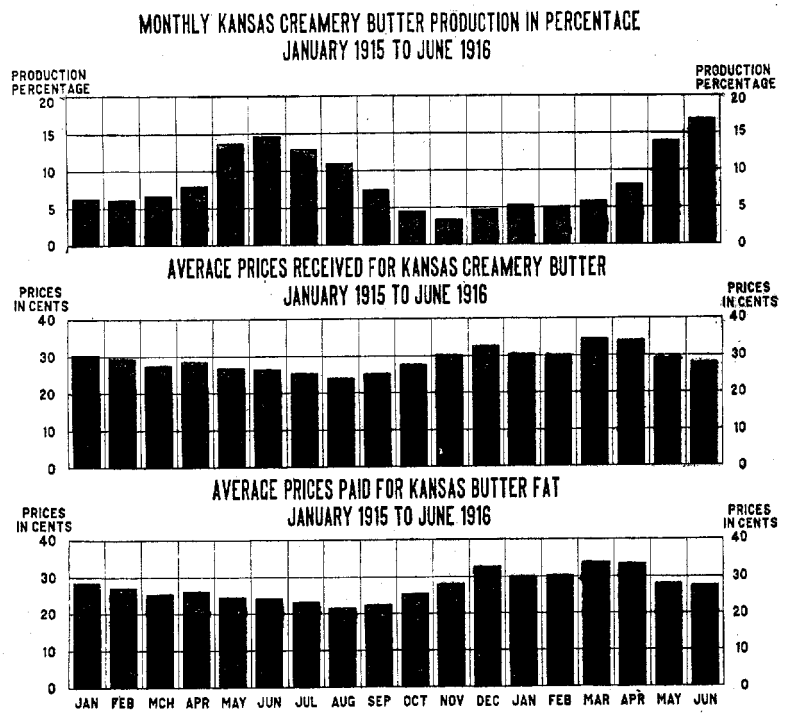


FIG. 23. Variation in Production of Butter, in Prices of Butter and in Prices of Butterfat.

Although the creameries received butterfat in quantities that varied greatly from month to month, the variation in the prices received for butter was relatively slight. It will be seen that during the months when a small amount of butter was made high prices were received by creameries for the butter, while in the months when a large amount of butter was made lower prices were secured. Farmers received prices for butterfat which varied substantially in proportion to the changes in the prices received by creameries for the butter.

regularly took out a uniform margin from month to month. In general the facts as presented in Fig. 23 show that high prices were obtained for butter when current production was low, although for a time in the spring of 1916 the war appears to have altered this rule. In comparison to Elgin prices, centralizers in Kansas received slightly lower prices for their butter and paid slightly higher prices for delivered but-

terfat. The Elgin market is not considered as a basis of price-making by the majority of creameries. Conditions as determined and interpreted by the managers of centralizers constituted the basis for profitable selling of butter and purchasing of butterfat.

BUTTER SALES.

According to the size of centralizer or of the distributing agency of which the creamery was a part, butter was sold both locally and in distant markets at favorable prices. When the volume of butter exceeding the local sales was large throughout the year effective connections existed between the creamery and wholesalers in consuming areas of other states, to whom butter was sent direct. This practice enabled

TABLE XIX. Average monthly prices paid by centralizers for butterfat in Kansas and prices received for butter, July 1, 1915, to June 30, 1916.

MONTH.	Elgin butter prices.	Prices paid farmers for cream delivered at centralizer per pound butterfat.	Prices paid farmers for cream delivered at cream station per pound butterfat.	Average prices paid farmers for cream bought in Kansas per pound butterfat.	Average prices received for butter by Kansas creameries.
July, 1915	$0.2550	$0.254289	$0.219866	$0.231999	$0.266815
August	.2460	.241664	.207309	.219656	
September	.2525	.277063	.211498	.224294	
October	.2760	.275188	.242469	.254540	
November	.3075	.299354	.271964	.282343	
December	.3330	.341170	.318131	.326161	
January, 1916	.3075	.317691	.286659	.298862	.304192
February	.3225	.321583	.287356	.301151	.305136
March	.3550	.356084	.327167	.338491	.343934
April	.3420	.555853	.521628	.533548	.539105
May	.2912	.302695	.268898	.281573	.288119
June	.2862	.294084	.260795	.273211	.277271
Year	.2929	.294153	.260221	.272790	.284974

such creameries as took advantage of it to sell at prices considerably above the prices obtained from wholesalers who handled butter in primary markets for reshipment to wholesalers in consuming markets. Since Kansas creamery butter is largely a surplus product that can not be consumed within the state, those creameries which had made more than the average volume of butter had developed the most efficient distributing departments and actually obtained the highest prices. Table XX gives the range in prices received for butter sold to different buyers and upon different markets. Practically any creamery, regardless of volume of business, was able to obtain high prices for butter sold locally, as evidenced by a difference of only 1.4263 cents between the highest and

lowest prices received for butter sold in the home market. On the other hand, there was a difference of 2.5862 cents in the prices received for butter sold in distant markets. This is one of the important factors which continually work to the advantage of a large creamery and to the disadvantage of a small factory which produces more butter than can be taken by the local market. It is one of the essential conditions of the creamery business in Kansas which necessitated the growth of centralizers. Without the development of this ability Kansas farmers could not profitably produce as much butterfat as they do.

BUTTERFAT PRICES.

To the farmer butterfat prices seem to be very unreliable, and unfortunately quite as unexplainable. However, there is nothing about these prices to warrant the common ideas of suspicion. They are determined on the basis of business principles, to the best of the ability of expert managers of long experience. From the farmers standpoint, questions

TABLE XX. Range of prices received for butter by centralizers in Kansas, July 1, 1915, to June 30, 1916.

TYPE OF MARKET.	Number of pounds average prices are based upon.	Average price received for butter per pound from each market.	Lowest price received for butter per pound from each market.	Highest price received for butter per pound from each market.
Local markets	3,882,886	$0.295533	$0.292960	$0.307223
Distant markets	13,361,156	.281758	.268950	.294812
To retailers	2,795,413	.299358	.295192	.306880
To wholesalers	13,054,011	.275545	.268950	.286043
Total butter sold	25,062,597	.284974	.272189	.298185

should arise, but they should also find correct answers. Accurate facts are the best explanations, but unfortunately they are not always available to all farmers, or understood by them.

The manager of a centralizer constantly keeps informed as to the various markets and the prices prevailing for butter. He knows just what it costs to concentrate butterfat at the plant, make butter and prepare it for shipment. He can never know definitely very far in advance how much will be secured for the butter after it is made. As an expert employed to run the business according to his best judgment, he can feel reasonably sure that prices will take certain movements up or down or remain stationary according to the tendency of buyers in the markets from which he gains knowledge. On the basis of the price which he feels certain of obtaining for the butter, he can quote a price for butterfat delivered at the creamery. This is possible because he knows the cost of making butter from the time the fat reaches the door to the time that the butter is put in the car for shipment. All farmers who find it possible to bring their cream direct to the creamery door

receive this price. As seen before, a very small proportion of Kansas farmers live close enough to either local or centralizer creameries to deliver for themselves.

Farmers who live so far from centralizers that they can not drive in and deliver the cream themselves resort either to direct shipment or the cream station, as has been explained. Those farmers who have large enough quantities of butterfat to ship directly to the creamery do so because they desire to take advantage of the price offered for butter-

TABLE XXI. Money costs paid by farmer who ships direct to creamery.

SEPARATE COSTS.	Number of pounds average costs based upon.	Average cost of each process per pound butterfat.	Lowest probable cost of each process per pound butterfat.	Highest probable cost of each process per pound butterfat.
Transportation	417,460	$0.0181	$0.0075	$0.0270
Cream can cost	.....	.0020	.0017	.0030
Total cost	.....	$0.0201	$0.0092	$0.0300

fat delivered at the creamery door. In this respect direct shippers are in the same class with farmers who deliver butterfat at the centralizer door, except that they can not take the time to drive to the centralizer, and consequently they pay the express company for hauling the cream over the railroad. Besides they must buy cream cans and bear the cost of depreciation and losses involved, as well as the risk of a loss in quality and quantity of cream while in shipment. The costs of transportation, according to cream tariffs, using a five-gallon can, for dis-

TABLE XXII. Costs paid by creamery on cream shipped by farmer direct to creamery.

SEPARATE COSTS.	Number of pounds average costs are based upon.	Average cost of each process per pound butterfat.	Lowest cost of each process per pound butterfat.	Highest cost of each process per pound butterfat.
Solicitation	1,064,207	$0.004912	$0.000510	$0.007017
Office labor	1,030,090	.004648	.002799	.007464
Office expense	1,017,130	.002778	.000999	.004622
Drayage depot to creamery	1,050,578	.002342	.000999	.008816
Total cost	5,061,935	$0.008718	$0.004726	$0.019694

tances in Kansas, vary from .75 to 2.7 cents. The average cost, as shown in Table XXI, approximates 1.8 cents. A close estimate would assign two-tenths of a cent for the cost and depreciation on cans. An average cost of about 2 cents, with a range of from .92 to 3 cents, covers the important money costs to the farmer of shipping direct. His net price for butterfat is therefore less than the net price to a farmer who drives to the creamery by the amount of these costs.

Farmers who choose to sell their cream to cream stations instead of exercising their privilege of direct shipment do so because the system is adapted economically to their needs. In this case the operator of the station, on behalf of the creamery, tests and weighs the cream, makes immediate payment, supplies the cans for shipment, and pays the transportation to the central factory, instead of the farmer. In being relieved of the responsibility of doing part of these functions which he himself would have to perform in case of direct shipment, the farmer indirectly pays the cost of delivering his fat to the creamery by selling his butterfat at a price which is lower than the delivered price. The difference in cream station prices and the delivered price of the same centralizer is accounted for by the cost of handling and shipping fat from the station to the creamery. On an average this difference was only 3.4244 cents a pound butterfat from July, 1915, to June, 1916. It is the cream station patron's cost of delivering his butterfat to the creamery. Without the station his fat could not have been profitably marketed.

TABLE XXIII. The cost of concentrating butterfat by cream stations.

SEPARATE COSTS.	Number of pounds of butterfat average costs are based upon.	Average cost of each process per pound butterfat.	Lowest cost of each process per pound butterfat.	Highest cost of each process per pound butterfat.
Commission to operator.....	8,264,764	$0.020624	$0.019327	$0.025300
Station rent, maintenance and supplies.....	7,528,314	.004745	.001856	.006700
Superintendence, labor and supplies.....	8,803,877	.004434	.003000	.006718
Office labor and expense.....	8,803,877	.003811	.002198	.005158
Transportation of cream.....	8,965,713	.015112	.008707	.018911
Cream can cost.....	8,123,835	.001683	.000268	.003506
Drayage depot to creamery....	8,526,566	.001191	.000719	.002981
Total cream station costs..	8,965,713	$0.051149	$0.047111	$0.056641

TABLE XXIV. Range in prices paid for butterfat delivered to centralizers and to cream stations July 1, 1915, to June 30, 1916.

PLACE OF DELIVERED SALES.	Number of pounds average prices are based upon.	Average price paid for butterfat per pound by each method.	Lowest price paid for butterfat per pound by each method.	Highest price paid for butterfat per pound by each method.
Centralizer.....	5,196,323	$0.294147	$0.285744	$0.301626
Cream station.....	8,992,744	.259903	.248747	.269361
Average centralizer and cream station.....	14,189,067	.270688	.260900	.271308
Difference in cetralizer and cream station.....	.....	.034244	.036997	.022865

There can be no reasonable controversy as to the necessity for each of the three ways by which farmers dispose of butterfat to creameries. Most of the creameries in the state make use of each method in order that the greatest possible volume of butterfat may be secured. No compulsion except individual economic circumstances directs the farmers of the state to patronize these systems. Moreover, there can be no fair comparison of the prices offered by one with those of the other method without including a full and accurate explanation embodying the costs involved. It has been the attempt to prevent the use of figures given herein in any illegitimate manner. Direct shipment and cream-station systems are not in opposition to each other. They are complimentary and economically necessary if creameries would serve all classes of farmers who have butterfat to sell. The prices quoted by each method are therefore not to be compared without elaborate explanation of the services performed and costs involved by each.

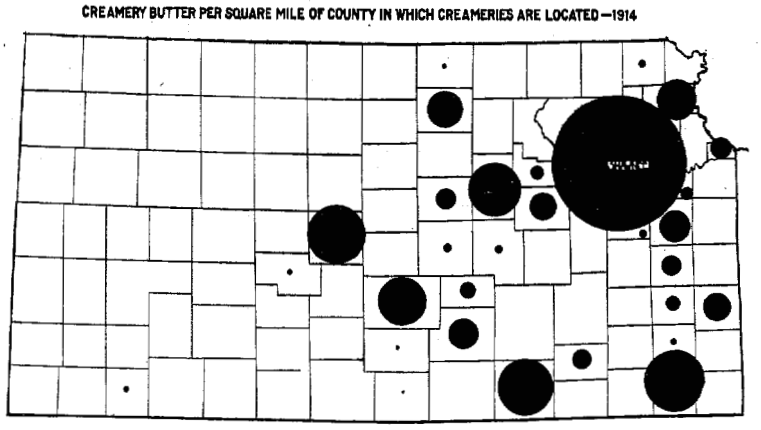


FIG. 24. Leading Counties of Kansas Creamery Butter Production.

The relative importance of different counties as manufacturing places of creamery butter indicate also the points from which large quantities of Kansas butter are shipped to markets both in and out of the state. The volume of butter handled by a single organization is the chief basis for the presence or absence of efficiency in selling butter in distant markets at profitable prices both for the creamery and for the farmer.

With the understanding that variations in the prices which different farmers receive are inevitable because farmers live under different conditions with respect to their distances from creameries and the amount of butterfat that they have to sell, it is not at all alarming to face conditions as they exist. The development of present methods is indeed fortunate, because it enables farmers of every class to market their fat regardless of quantity. Contrary to popular opinion, the prices offered by centralizers for fat delivered at the door averaged considerably above the Elgin price for the year. Seven months of the year in which the study was made, delivered prices ranged from .1034 of a cent to 2.4563 cents above Elgin (see Table XIX), while for the other five months they fell below Elgin prices by amounts ranging from .0711 of a cent to only .3336 of a cent. Cream station prices varied in amounts corresponding to the variation in delivered prices.

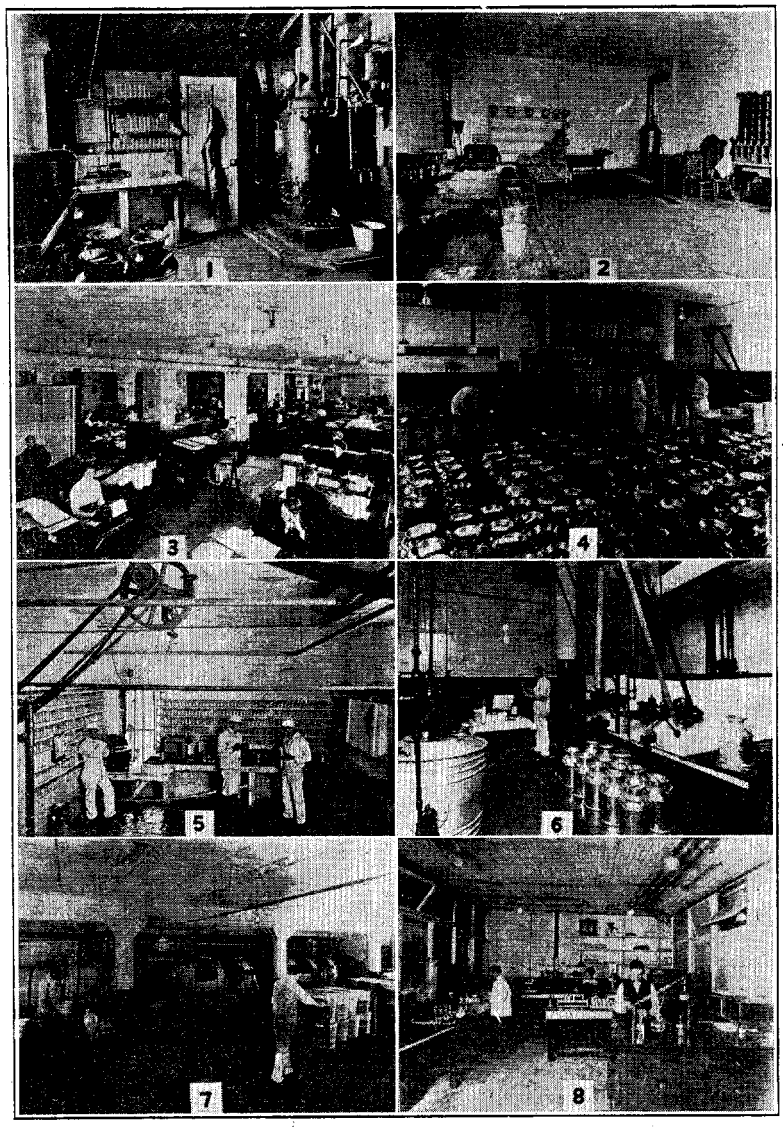


FIG. 25. Views Representing the Concentration of Butterfat and Making of Butter.
Eight photographs in the cut show the method of concentrating fat for shipment and the creamery processes of making butter in centralizers.

Nos. 1 and 2. Interiors of cream stations, showing boiler, cream-testing outfit and cream cans. The cream station is the most economical method of marketing butterfat by farmers who milk a few cows as a side line in Kansas.

No. 3. Business office and accounting department of a centralizer, where experts see to the efficient marketing of butter in distant states and a clerical force handles the information of the business, which makes possible low costs and highest possible prices for butterfat.

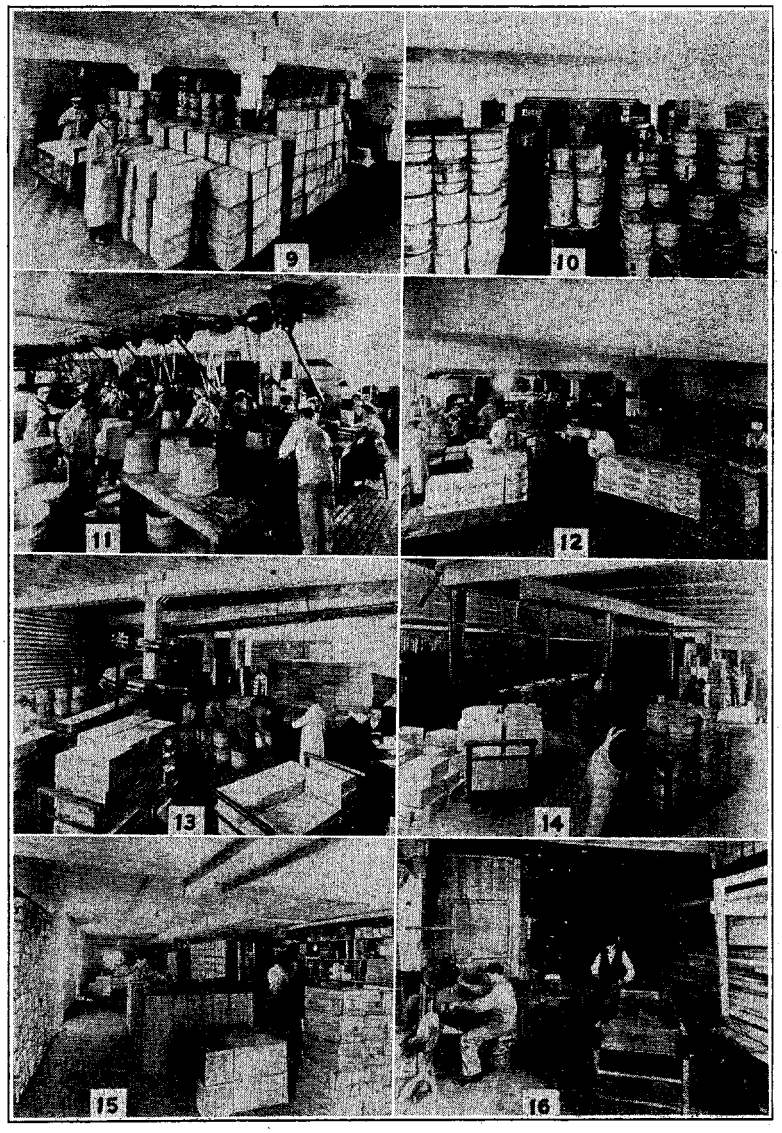


FIG. 26. Views Representing the Storing, Packing and Shipping of Butter.

Eight photographs in the cut show the characteristic phases of handling butter and necessary materials by centralizers.

No. 4. Cream receiving and weighing room. Here the problem is to determine correct weights, the commercial grade of the cream and start the butterfat on its way to the pasteurizer, where the germs that would make poor-quality butter, as well as those that spread disease to the consumers, are killed.

No. 5. Cream testing room, where the amount of butterfat in the cream received from each farmer or cream station is accurately determined. The results obtained in this process and in weighing and grading the cream determine the amount of the farmer's cream check.

No. 6. Starter room, where the bacteria which cause good flavor in butter are grown in sterile milk. This bacteria-fllled milk, known as starter, is mixed with the cream before churning, and aids not only in making good-quality butter but also in preserving butter.

No. 7. Churn room, in which the cream after leaving the vats, where it was mixed with starter and cooled to the proper temperature, finds its way into power churns and is converted into butter.

No. 8. Moisture-testing room and chemical laboratory, where carefully taken samples from each churning are analyzed and the percentage of water accurately determined. Butter must not contain over 16 per cent of water on penalty of a heavy fine; hence the importance of a well-equipped laboratory.

No. 9. Butter taken directly from the churn is packed in large boxes for cooling, preparatory to being cut into pound prints and sold to retail stores.

No. 10. In many of the primary markets tub butter is more generally handled than butter put up in other types of packages, This picture shows tub butter in storage preparatory to shipment.

No. 11. Most of the tub butter purchased, either from the supply of current production or from the storage supply, is taken from the tubs and made into prints before it goes to the retailer.

No. 12. In this room prints of butter are wrapped in parchment and then placed in the cartons, sealed, and passed along by machinery to boxes, where they are packed for shipment.

No. 13. Butter is assembled from the storage rooms to one place previous to shipment, by means of labor-saving machinery. Notice the carrier used for this purpose. Careful checking saves by reducing losses and eliminating misunderstandings. Accuracy and a record of business facts are essential to creamery success.

No. 14. Large concerns, because of the great quantity of butter handled, are enabled economically to provide facilities for shipping, whlch save large drayage bills and the extra cost in freight due to the higher rates ruling for less than car-lot shipments of butter. Notice the quantity of butter handled by trucks where these expense-reducing facilities are provided.

No. 15. Concerns which make a large volume of butter make use of immense quantities of supplies, such as butter color, salt, liners, parchment paper, tubs, boxes, cartons, etc. To buy these supplies in large amounts at one time, in order to take advantage of the lower prices given to those who place large orders, it is necessary to have room at the creamery to receive them. Hence the economic value of a spacious supply room.

No. 16. Large creameries find a repair department, in which the men employed become expert, an expense-reducing addition. In small-sized concerns, of course, one man, who supposedly should be expert at every task, seldom works on one job long enough to become expert at anything.

COST OF MAKING BUTTER.

Creameries which make large quantities of butter find that adequate accounting systems are essential. Only by studying costs with a view to reducing expenses are they able to pay the highest possible prices for butterfat. Centralizers were able to furnish the costs from their accounting systems, while small creameries neither kept such information nor did they appreciate the importance of it. The figures for cost of making butter include all items of labor, expenses and supplies from the time the butterfat is received until it is packed ready for storage or loading for shipment. The relative importance of different counties of Kansas as creamery butter-making points is indicated in Fig. 24. The typical processes in buying butterfat, making butter and shipping it are to be seen in Figs. 25 and 26.

More than half of the creamery butter, or 57.3 percent, for which figures were secured, was put up in prints, while the other 42.7 percent was packed in tubs or boxes. Print butter required more labor than tub butter and cost .3734 of a cent a pound more to make than did the tub butter. The cost of making print butter ranged from 1.7075 to 3.8818 cents in different centralizers, averaging 2.0953 cents, The cost of tub butter varied from 1.35 cents to 3.6322 cents a pound, and averaged 1.7219. The average cost of making a total of 19,618,491 pounds of cen-

tralizer butter put up in both tubs and prints was 1.9574 cents a pound. Different concerns had costs ranging from 1.5305 to 3.5302 for making their butter.

COST OF MARKETING BUTTER.

There are many different ways open to creameries for disposing of their butter, and the cost to the creamery depends upon the type and extent of service which it attempts to perform. Practically all of the successful centralizers made more butter than they could sell locally, and

TABLE XXV. The range in costs of making creamery butter in Kansas.

Butter Put Up In—	Number of pounds average costs are based upon.	Percent of butter.	Average cost of making butter.	Lowest cost of making butter.	Highest cost of making butter.
Prints	9,652,401	57.3	$0.020953	$0.017075	$0.038818
Tubs	6,754,043	42.7	.017219	.013500	.030322
All butter	19,618,491	.....	.019574	.015305	.035302

consequently their problem related to selling both locally and in distant markets. In each case that method was chosen from the possible ways of marketing which was expected to yield the highest net price for the butter. According to the size of the local market, the quantity of butter available for sale throughout the year, and the efficiency of local jobbers in relation to cost, different creameries sold butter locally through jobbers

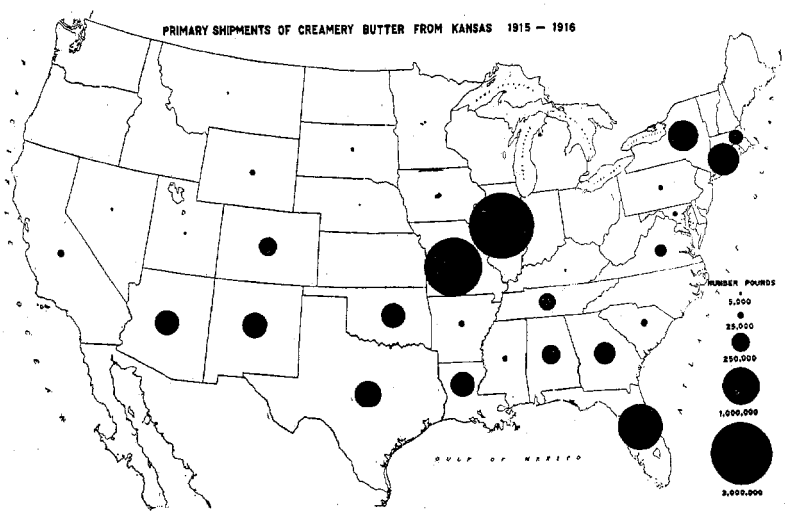


FIG. 27. Relative Importance of Various States as Buyers of Kansas Creamery Butter.
Kansas creamery butter is sold in not less than thirty-four states. Approximately two-thirds of the creamery butter made in the state and 98.5 percent of that which is shipped to other than Kansas markets goes to sixteen states designated in the map by the larger dots, representing from upwards of 25,000 pounds to over 3,000,000 pounds.

in some cases and in others developed their own delivery system. When a delivery system is operated by the creamery the price obtained is usually enough higher to pay whatever extra cost is involved, otherwise the delivery is not justified. With few exceptions sale of butter through jobbers was found to be the most economical method to the creamery. The exact cost of selling butter locally was not determined, but was included in the average cost of selling both locally and in distant markets. In Table XX, 17,244,042 pounds of butter were sold in local and in distant markets. Only 22.5 percent was disposed of locally and more than three-fourths, or 77.5 percent, was shipped to distant points.

TABLE XXVI. The primary markets in which 12,823,572 pounds of Kansas creamery butter sold, 1915-16.

STATE.	Pounds of butter.	Percent of butter shipped by Kansas.	STATE.	Pounds of butter.	Percent of butter shipped by Kansas.
Illinois	3,396,998	26.5	South Carolina	28,275	.22
Missouri	2,632,4e0	20.5	Arkansas	25,841	.20
Florida	1,568,143	12.2	California	24,055	.19
Connecticut	801,088	6.2	Pennsylvania	16,828	.13
New York	736,469	5.7	Mississippi	14,776	.11
Texas	505,876	3.9	Maryland	14,303	.11
Arizona	458,226	3.6	Wyoming	12,000	.09
Oklahoma	435,930	3.4	Utah	5,100	.04
New Mexico	425,115	3.3	Montana	3,200	.....
Louisiana	395,031	3.1	Old Mexico	2,900	.....
Alabama	350,061	2.7	Iowa	2,420	.....
Georgia	337,975	2.6	Rhode Island	1,575	.....
Colorado	205,430	1.6	Minnesota	1,340	.....
Tennessee	181,217	1.4	Kentucky	710	.....
Massachusetts	144,875	1.1	Nebraska	430	.....
Virginia	93,797	.7	Nevada	110	.....
			South Dakota	10	.....

Of 15,465,277 pounds of butter sold in markets other than the towns or cities in which the creameries were located, 2,641,695 pounds, or 17.1 percent, went to points in Kansas, while 12,823,572 pounds, or 82.9 percent, went to points in thirty-four other states. Approximately two-thirds of Kansas creamery butter is a surplus product which has to be sold in markets outside the state. (See Fig. 27 and Table XXVI.) The chief costs of marketing butter by centralizers are therefore due to such expenses as postage, telephone and telegraph services and a competent stenographic and accounting force. The cost of loading butter into cars ready for shipment also was included. The average cost for marketing 22,201,540 pounds of butter which was sold in both types of markets was

only slightly above one-half cent a pound, or .5083 of a cent. The range in costs by different creameries was from .1879 to .6269 of a cent.

TOTAL CONCENTRATION, MAKING AND MARKETING COSTS.

One can not judge of creamery efficiency by comparing total creamery costs, without knowing their relation to the prices received for butter and paid for butterfat. *Costs are of relative and not of absolute import-*

TABLE XXVII. The range in costs of marketing creamery butter by creameries in Kansas.

	Number of pounds average costs are based upon.	Average cost of marketing butter.	Lowest cost of marketing butter.	Highest cost of marketing butter.
All butter	22,201,540	$0.005083	$0.001879	$0.006269

ance under competitive conditions. To the operators of creameries the range of total costs as well as of separate process costs are of interest. By comparison it is possible to check up the weak points of an individual business and thereby to increase the efficiency of the organization. Table XXVIII indicates that the average total cost for concentrating, making and marketing for each eight-tenths of a pound of butterfat, on the basis of more than 14,000,000 pounds, was 6.0327 cents. Different creameries had total costs varying from 3.1983 to 7.6816 cents, according to the proportion of the butterfat which they were able to secure delivered in comparison to that upon which they were obliged by farmers to pay concentration costs.

TABLE XXVIII. Range in the total costs of concentration, of making and of marketing by centralizers of the butterfat in a pound of creamery butter.

Item of Expense.	Number of pounds average costs are based upon.	Average cost per 0.8 pound butterfat of each process.	Lowest cost per 0.8 pound butterfat of each process.	Highest cost per 0.8 pound butterfat of each process.
Concentration	14,189,117	$0.028670	$0.004183	$0.044615
Making	19,618,491	.019574	.015305	.055302
Marketing	22,201,540	.005083	.001879	.010994
Overhead	.....	.007000	.007000	.007000
Total costs	.....	$0.060327	$0.031983	$0.076816

RELATION OF COLD STORAGE TO PRODUCTION AND CONSUMPTION OF BUTTER.

The vast majority of small creameries, turning out more than half of the creamery butter of the countrry, have not developed adequate or efficient methods of selling their butter. Undoubtedly one cause for this condition has been the small average volume of butter made by them. Receiving butterfat from farmers in amounts which vary monthly from three-fifths to more than one and a half times the average monthly production for the year, small creameries, having no inclination nor facili-

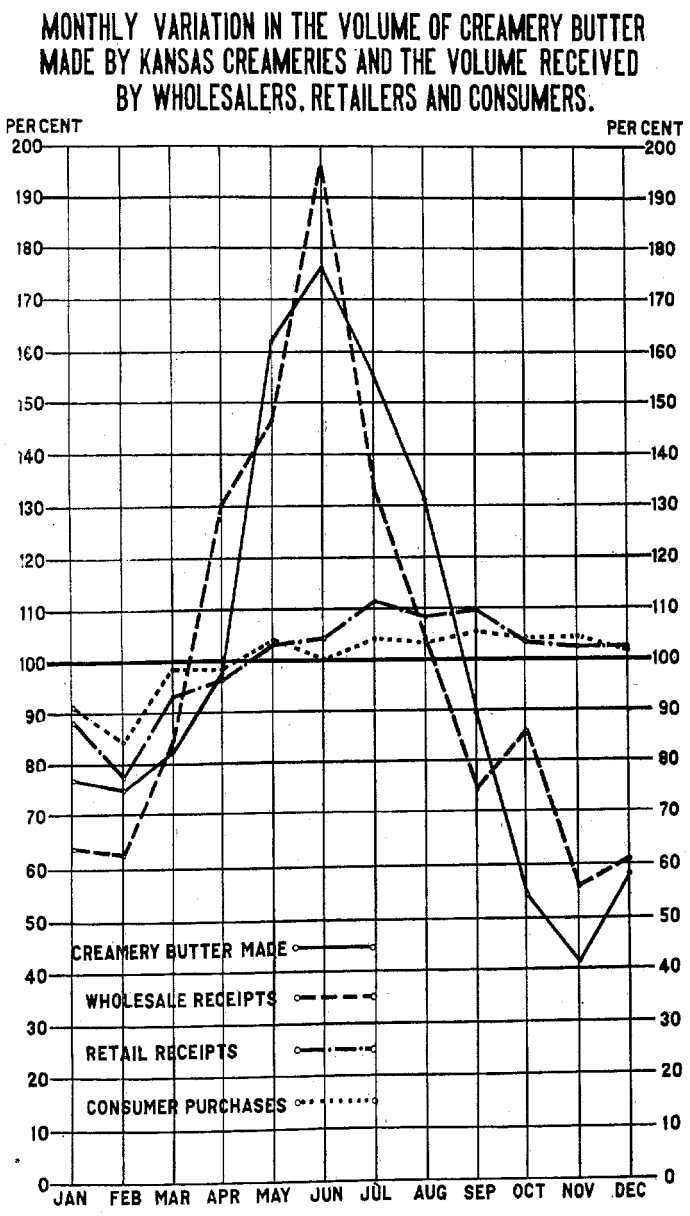


FIG. 28. Relation of Seasons of Butter Production to Seasons of Butter Consumption.

Careful study of the lines in this chart will show that the amount of butter put out by Kansas creameries by months varies from 41.4 percent of the average monthly output to 176 percent, or a range of 134.6 percent; and the range in receipts by wholesalers is from 56.9 percent to 195.9 percent, or 139 percent. On the other hand, consumers vary in their purchases by months only from 84.4 percent of the average monthly amount bought by them to 105.5 percent. This is a range of 21.1 percent, which is very slight compared to the variation in production and in wholesale receipts. The line for retailers shows a variation of from 77.6 percent to 111.4 percent, or a total of only 33.8 percent. This means that retailers for the most part do not store butter, and consequently since creameries do not store very large amounts, the wholesaler is the specialist by whom this economically necessary function is performed.

ties to store their output, have been accustomed to sell it at once. Since they have not themselves found the retailer to whom most butter goes before reaching consumers, a group of middlemen known as wholesale receivers have come into use, who specialize in finding buyers for the output of the small creameries. These wholesalers receive butter from the creameries in large or small amounts according to the months in which creameries make large or small quantities. But in selling butter wholesalers are unable to dispose of as large quantities in the summer as they receive. This condition is unavoidable, because consumers eat butter in about the same quantity the year round, while farmers and creameries produce the butter chiefly in the summer. The consumer does not buy butter except as he uses it. The retail store caters to the consumer, and since it has no facilities for storing any important quantity of butter, it is obliged to buy only such amounts as it can sell within a few days or a week. The wholesaler, therefore, finds himself between two situations which do not match together. He is obliged to make them fit as best he can. His success depends on his. ability to find markets and to induce the buyers in these markets to consume more or less butter according to the season. His understanding of the consumer is that rising prices result in smaller and fewer purchases. Lower prices, however, induce the consumer to buy and eat more butter. The wholesaler also knows that while more butter is produced in the summer than consumers will pay profitable prices for, much less is produced in the winter than is required to meet the needs of consumers. His task, therefore, is not only to sell butter, but to sell it in such a manner that it will not be wasted in summer. Were consumers induced to take all the butter produced in summer during that season, unnecessarily low prices would result and a great deal of butter would be practically wasted. Moreover, the butter made in winter is not sufficient in quantity to feed the people during that season. Therefore his occupation is to use a practical method of conserving the surplus of summer, when immediate consumption would be wasteful, and of holding it for the winter's use. Price changing is the method at his disposal to force economy and thus to conserve summer waste for winter use. This task falls upon the wholesaler, because neither farmers or creameries, on one hand, nor retailers or consumers, on the other, attempt seriously to solve the problem themselves as individuals. For the most part they could not solve the problem even were they to try. The wholesaler controls the situation by exercising his judgment on the basis of market conditions. He buys butter from creameries on the basis of the price which he feels reasonably certain of obtaining when he sells it. The wholesaler runs a speculative business in part, for the reason that he is obliged to hold large quantities of butter from one season to another. But speculation is one of the most important economic forces. Its functions are indispensable. This does not mean that abuses do not exist or that the abuse side of speculation is essential to the holding of butter from the surplus to the deficit season. Abuses merely indicate that some men doing a wholesale and storage butter business are breaking the rules of the game, and that in permitting these unfair practices the government has failed to perform its

TABLE XXIX. Variation in the monthly production of Kansas creamery butter and the variation in receipts of butter by wholesalers, retailers and consumers, in markets where Kansas butter is sold.

Month.	Pounds of butter made by Kansas creameries.	Percentage of monthly variation from the average monthly production.	Pounds of butter received by wholesalers.	Percentage of monthly variation from the average monthly receipts.	Pounds of butter received by retailers.	Percentage of monthly variation from the average monthly receipts.	Pounds of butter purchased by consumers.	Percentage of monthly variation from the average monthly purchases.
January	1,439,521	77.0	581,122	64.0	1,685,078	88.4	1,884,537	91.5
February	1,403,292	75.1	568,288	62.6	1,477,170	77.6	1,737,060	84.4
March	1,539,255	82.5	767,251	84.5	1,773,092	93.1	2,032,683	98.7
April	1,821,572	97.6	1,181,600	130.2	1,854,492	96.3	2,023,748	98.3
May	3,027,021	162.0	1,351,756	146.7	1,966,925	103.2	2,135,574	103.7
June	3,285,112	176.0	1,777,912	195.9	1,985,839	104.1	2,059,060	100.0
July	2,907,549	155.7	1,215,149	133.9	2,132,579	111.4	2,144,727	104.2
August	2,447,700	131.1	943,300	103.9	2,063,050	108.2	2,132,660	103.6
September	1,665,175	89.2	675,901	74.5	2,091,690	109.8	2,171,357	105.5
October	1,013,643	54.2	779,543	85.9	1,965,194	103.1	2,141,407	104.0
November	772,230	41.4	516,389	56.9	1,944,028	102.0	2,147,958	104.3
December	1,083,180	58.0	552,952	60.9	1,948,742	102.3	2,095,321	101.8
Year 1915	22,405,250	.....	10,890,963	.....	22,863,879	.....	24,704,092	.....
Monthly average	1,867,104	100.0	907,580	100.0	1,095,323	100.0	2,058,674	100.0

share in production. It is not true, however, that abuses rule in the storing of butter.

Centralizer creameries, in making vastly larger quantities of butter than small local creameries, are enabled to establish their own selling departments instead of being forced to rely on the usual type of wholesaler. They find that considerable saving can be made by establishing regular and permanent trade connections with retailers so far as possible, and with wholesalers who distribute direct to retailers instead of to other wholesalers, in which case reshipment is often necessary. As a result, relatively higher net prices are obtained by centralizers than by small creameries in the same territory. It must be remembered that each of the three functions — concentration and buying of butterfat, making butter, and selling butter — are separate when it comes to competition. Whatever an efficient selling department can save for a centralizer over and above the usual method of selling through wholesalers is a most legitimate source of profit fairly earned under the competitive system. This saving may, however, be used to increase prices for butterfat instead of being retained as profit, depending on the attitude of both farmers and the government, and their efforts to stimulate efficiency.

Information obtained from the states in which most of the butter shipped from Kansas was sold is contained in Table XXIX. Fig. 28 presents the same material in graphic form Actual conditions under which Kansas butter is marketed prove both the function of wholesalers and the economic necessity of holding butter in cold storage. Consumers and retailers in these markets varied only slightly in their receipts of butter from month to month, while wholesalers varied in their receipts more than four to six times as much. Wholesalers purchased their greatest or smallest amounts of butter according to the amount produced by creameries.

PRICES OF BUTTER AND STORAGE.

When the production of butter increases in the spring, and receipts upon the wholesale markets exceed the amount which consumers will take at prices previously charged, sale of surplus butter is brought about by lower prices. In normal seasons, during April or May, these prices have fallen sufficiently low because of the effort of wholesalers to induce increased consumption, to warrant those interested in storage to purchase for holding. Fig. 29 gives the facts concerning butter production in Kansas in relation to the net intake and output of butter by storage concerns for the United States. The figures upon which the chart is based are shown in Table XXX. While only 10 percent, approximately, of the year's output of creamery butter is held in storage from surplus to deficit seasons of production, the steadying influence which the storage of this butter exerts upon prices is truly remarkable. Before storage facilities were perfected and utilized for holding butter, prices fluctuated, on an average, 120 percent. (Bulletin 270, University of Wisconsin, page 37.) With the development of storage and the operation of speculation, extreme fluctuation in price has been greatly reduced. Prices neither rise as high nor fall as low as they formerly did. Fig, 30 shows

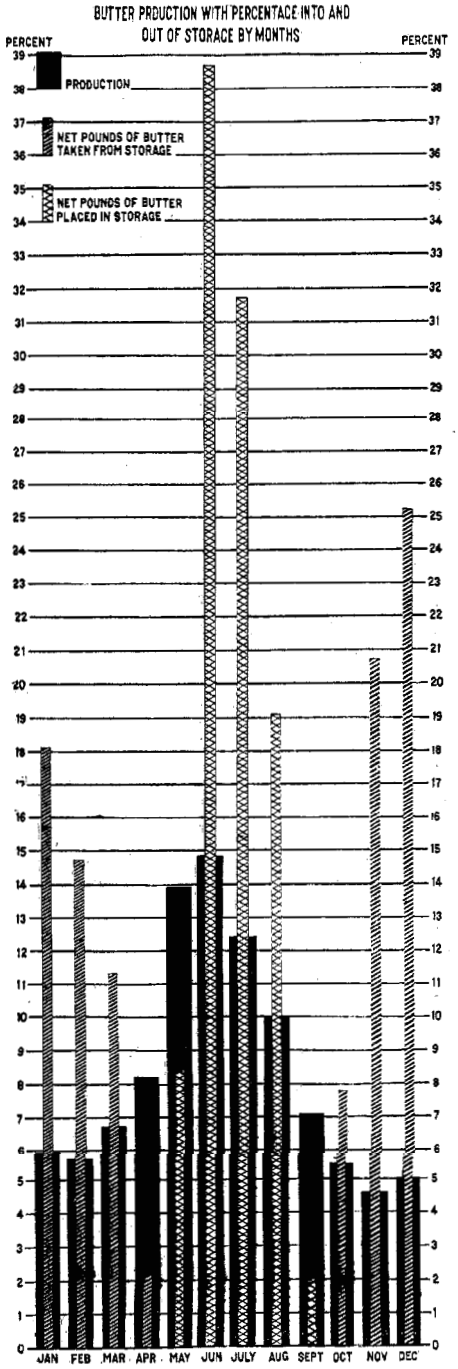


FIG 29. Butter Productlon, With Net Percentage Into and Out d Storage, by Months.

About one-tenth of each year's creamery butter is held in storage from the surplus season, running from May to August, to the deficit season, running from October to April The relative importance of each month either as a period during which butter is stored or in which storage butter is consumed, is shown in the chart in comparison with the amount of butter produced during the month. It will be seen that when the most butter is made the greatest proportion of the year's storage butter finds its way into storage, and that when little butter is being made great quantities come from storage to supply the wants of the people. In the absence of cold storage, many people who regularly buy in winter would not be able to on account of the prices which would be secured for the low-current output.

the relation of variation in production to the variation in price. The wide fluctuations have been chiefly reduced by storage to approximately one-third of their former range.

To the farmer, stability of price for butterfat has added greatly to his income. Formerly he obtained the very lowest prices when the bulk of his butterfat was sold. At present, while the price remains somewhat lower in winter than formerly, the substantial increase in summer has greatly increased the average price for his year's sale of butterfat. Consumers benefit by storage because it guarantees a supply of butter at reasonable prices, whereas formerly shortage of butter and extremely high prices sometimes compelled strenuous economy and even the doing without butter at times.

TABLE XXX. Relation of storage intake and output to season of surplus and deficit butter production.

MONTH.	Kansas percentage production by months.	Net pounds of butter placed in storage.	Percent of net butter stored, placed in storage by months.	Net pounds of butter taken from storage.	Percent of net butter taken from storage, taken by months.
May, 1915	13.93	6,805,000	8.5	.....	.....
June	14.88	30,961,000	38.7	.....	.....
July	12.47	25,329,000	31.7	.....	.....
August	9.97	15,184,000	19.1	.....	.....
September	7.09	1,650,000	2.0	.....	.....
October	5.48	.....	.....	6,581,000	7.8
November	4.57	.....	.....	17,383,000	20.7
December	5.06	.....	.....	21,192,000	25.2
January, 1916	5.94	.....	.....	15,206,000	18.1
February	5.66	.....	.....	12,370,000	14.7
March	6.72	.....	.....	9,489,000	11.3
April	8.22	.....	.....	1,791,000	2.2
Year	100.00	*79,929,000	100.0	*84,012,000	100.0

*Difference of 4,085,000 pounds represents accumulated surplus from previous year.

Holding butter in cold storage being essentially a wholesale function, the cost is paid by the wholesaler. The opportunity profitably to hold butter in storage depends upon the probable future market conditions in relation to the price of butter at time of storage and the length and costs of the storage period. The average length of time for which butter is held in storage is approximately six months. In the season of 1915 to 1916, according to associated warehouse reports, about 80,000,000 pounds of butter was held in storage, amounting to about 10 percent of the output of the creameries of the country. With butter averaging 28.5 cents a pound, interest at 6 percent, insurance 50 cents per $100 for six months, and a storage charge of ¼ cent a pound for the first month

and 1/8 cent each month thereafter, storage costs for six months would amount to the following:

Interest on 1 pound butter, price 28.5 cents, at 6 per cent for 6 months.	$0.00855
Insurance on 1 pound butter at 15 cents per hundred pounds per month, ...	.009
Storage on 1 pound butter at ¼ cent first month, 1/8 cent thereafter.	.001425
	$0.018975

On the basis that one-tenth only of the butter is held in storage, the average cost is only about .19 of a cent. Compared to the benefits derived from steadier prices as a result of storage, the costs are trifling.

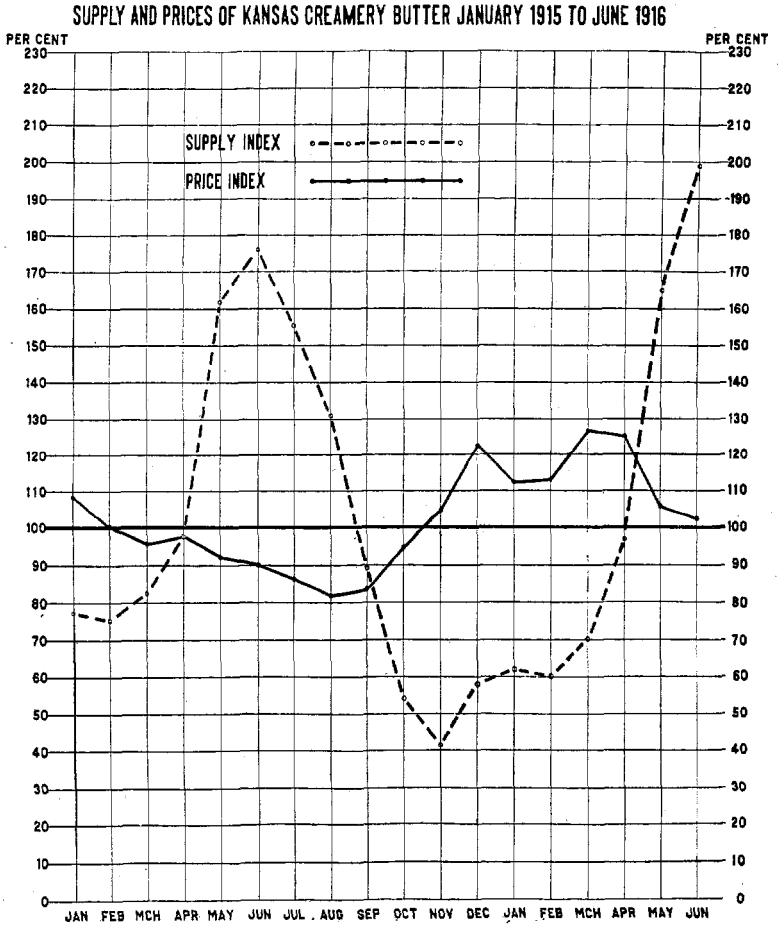


FIG. 30. Cold Storage Reduces the Fluctuation in Butter Prices.

Prices for Kansas creamery butter varied oniy 43.5 percent from January 1915, to June, 1916, while the production during this period varied 157.7 percent. Before cold storage made it possible to hold over the surplus butter of the summer months for consumption in the winter, prices fluctuated 120 percent, as has been shown by a compilation of figures for the years 1880-'84. Farmers at that time were obliged to take the lowest prices when they produced the greatest quantities of butterfat, and they received the highest prices when they had little to sell. With storage the prices of butter are kept up in the summer, so that the farmer now secures much more return for his year's production of butterfat than formerly.

Besides storage, the wholesale buyers paid the freight and other costs in transit from the creamery to destination. The average cost for transporting and icing butter from Kansas centralizers to the markets in which it was sold was approximately 1.9 cents. Wholesale receivers obtained a little more than 1 cent per pound for their services. The jobbers who regularly handled the butter between wholesale receivers and retailers received uniformly 1 cent a pound. This type of wholesalers provided the delivery system and the machinery for supplying retailers with butter and securing payments for the same. In some cases both receiving and distributing wholesale functions are performed by departments of the same company.

BUTTER RETAILING COSTS.

The most expensive step in the marketing of Kansas butter was found to be the retail grocery store. On an average, 4.5 cents was added to the delivered price which the grocery store paid for the butter. According to the usual costs of retailing, this 4.5 cents was spent by the store in paying 1.86 cents a pound for delivering the butter to the consumer's residence, and .75 of a cent was virtually wasted because of bad debts and the granting of long credit upon which interest was not collected. The remaining 1.89 cents covered the costs of running the business at the grocery store and for giving whatever profit was gained.

WHO GETS THE MONEY?

The marketing of butterfat is far from a simple problem. Many processes are involved in the movement of cream from an average Kansas farm to the consumer in the form of a pound of wholesome creamery butter. The average farm, while only 4.6 miles from town, is 19 miles from a creamery, and consequently there are expenses to be paid before the butterfat which will make a pound of butter can be landed at the creamery door. Fig. 31 shows that these expenses consisted of slightly more than 1 cent paid for hiring the station operator, .2 of a cent for the use of the cream station, .7 of a cent for labor and supplies in making and keeping a record of the butterfat handled so that payment could accurately be made, .14 of a cent for supplying cans to carry the cream to the creamery, 1.3 cents to the express company for hauling the cream, and .1 of a cent for draying the fat from the depot to the creamery. The farmer who lived close enough to a creamery to deliver his butterfat did not pay these expenses, and consequently instead of 21.06 cents for .8 of a pound of butterfat, he received 24.52 cents. On the basis of a full pound of butterfat, he received 30.65 cents instead of 26.32. The farmer, on the other hand, who lived farther from the creamery than the average, paid more than 1.3 cents to the express company, and therefore received just that much less than 21.06 cents for the eight-tenths of a pound of butterfat.

At the creamery it cost 1.96 cents to make .8 of a pound of butterfat into a pound of butter. Another .51 of a cent a pound was paid for telephone, telegraph services and stenographic help in finding buyers for

the butter, and in loading the butter into cars for shipment to these buyers. The general or overhead expenses of the creamery process amounts to .7 of a cent a pound. Finally, the average net profit made

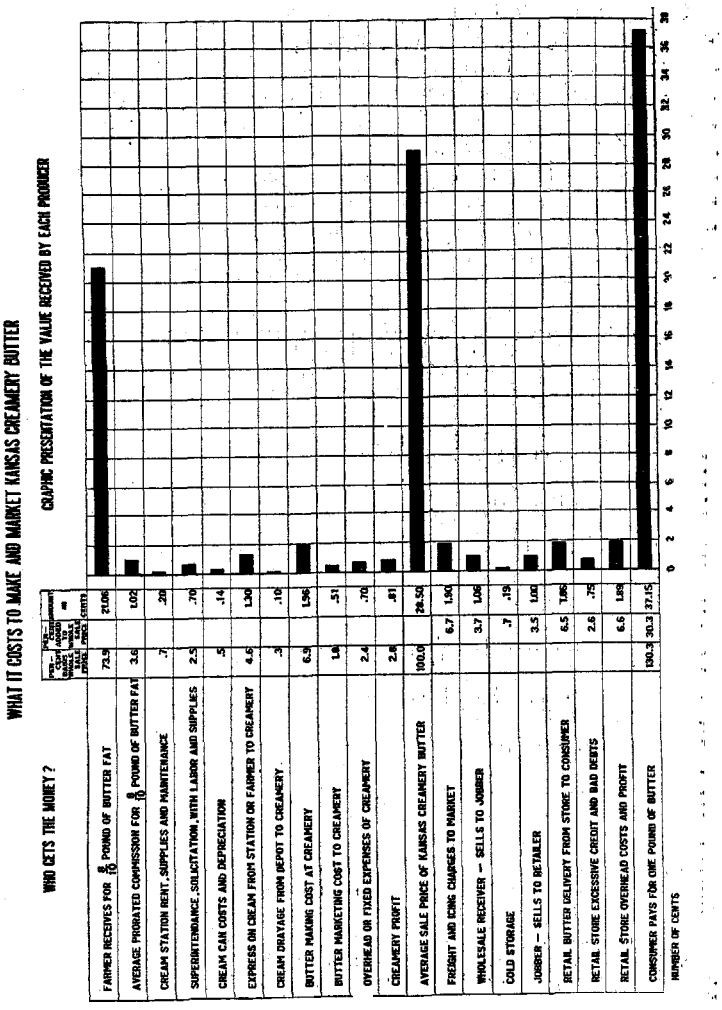


FIG 31 The Costs of Concentrating Butterfat and of Making and Marketing . . Creamery Butter.

Farmers produce farm products because of the profit which their activities will enable them to obtain. The wholesale market price is the most definite and relatively dependable price and the one to which farmers look in determining whether, with their individual cost of producing butterfat, it would be profitable to start or to continue milking cows. It is a noteworthy fact that farmers in Kansas receive almost three-fourths of the wholesale value of each pound of butter. The remaining quarter of the value is divided among the performers of at least five separate functions, from which no one is receiving, on an average, unfair competitive profits. The consumer is obliged to pay the additional costs of transferring butter from the creamery to his home, and since this task involves time and few or many processes according to conditions, the amounts added to the wholesale price vary and the consumer's price therefore does not represent the same amount in all sections.

by the creameries on a pound of butter was .81, or only slightly over four-fifths of a cent.

Centralizers sold the butter at an average price of 28.5 cents a pound. This was substantially the wholesale price of butter in the large markets of the country for the period in which the study was made. It therefore was the price to which producers of butterfat were obliged to look if, with their individual costs of production, a profit was to be expected in producing butterfat. A serious popular error has been made for years in considering that farming alone was entitled to the name production. Butter is not completely produced until lodged with the consumer. Every necessary step from the farm to the consumer is therefore a part of production, and those who render the service of each step are as truly producers as are the farmers themselves. Because of the preva-

COMPARISON OF WHOLESALE, RETAIL AND CONSUMERS PRICES IN HOME AND DISTANT MARKETS

FOR BUTTER SOLD IN KANSAS	NUMBER CENTS	PERCENTAGE ADDED TO PRICE WHOLESALE	PERCENTAGE BASIS—PRICE CONSUMER
CREAMERY RECEIVED	28.5		81.4
RETAIL STORE PAID	30.0	5.2	85.7
CONSUMER PAID	35.0	22.8	100.0
FARMER RECEIVED FOR $\frac{8}{10}$ POUND BUTTER FAT	21.0		60.0
FOR BUTTER SOLD IN FLORIDA			
CREAMERY RECEIVED	28.5		71.2
RETAIL STORE PAID	36.0	26.3	90.0
CONSUMER PAID	40.0	40.3	100.0
FARMER RECEIVED FOR $\frac{8}{10}$ POUND BUTTER FAT	21.0		52.5

FIG. 32. The Retail Prices of Butter Vary More Than Wholesale Prices.

The farmer receives the same amount for the butterfat in a pound of butter whether it is sold in Kansas or in Florida. He can not expect to obtain more for butter sold in Florida, because the creamery does not secure more, even though the consumer in Florida is obliged to pay higher prices than the consumer in Kansas. The additional costs of selling Kansas butter to consumers in Florida, as compared to selling Kansas butter to consumers in Kansas eat up the difference in price paid by consumers in the two states. Were it not for the possibility of selling butter in these distant markets at prices which net the farmer just as much as for the butter consumed at home, Kansas farmers would not be able profitably to produce as much butterfat as is now turned out by the state.

lence of this error, farmers and consumers alike, in making comparisons directly of the value which individual farmers received with the price paid by individual consumers, have drawn useless and harmful conclusions. The purposes of making price comparisons by the farmer are chiefly to determine the amount and justice of prices in relation to services performed, and to decide whether, with certain prices, produc-

tion will yield a profit. Neither individual farmer receipts nor individual consumer expenditures are reliable or relatively stable quantities. On the contrary, they are extremely variable. Because of their variable character the conclusions drawn from such comparisons are utterly worthless in helping the farmer to decide the two problems in which he takes a very proper interest. Instead of comparing his receipts with indefinite and variable consumers' prices, it is to his interest to make comparisons with the wholesale price, which is relatively the most stable and definite figure possible. In addition to this wholesale price, the consumer pays, in buying butter, many or few additional charges which are large or small according to the intermediate services necessary to transfer butter from the creamery to his residence. From this wholesale price are deducted all the costs of manufacturing, as well as the special costs of getting the butterfat from the farms to the creamery, before it is possible to arrive at the individual farmer's net price. Since farmers vary in their distances to the creameries, their returns also vary because different subtractions from the wholesale price are thereby made necessary. Fig. 32 gives a comparison which indicates the variation of consumers' prices in relation to the wholesale price. A similar reasoning for the variation in farmers' net prices was made earlier.

TABLE XXXI. Comparison of dairy cows, butterfat sold and farms per square mile.

STATE.	Dairy cows per square mile.	Pounds of butterfat sold per square mile.	Dairy cows per farm.	Pounds of butterfat sold per farm.	Farms per square mile.
Wisconsin	26.6	873.2	8.3	272.4	3.21
Iowa	25.3	772.1	6.5	197.7	3.90
Minnesota	13.5	499.8	6.9	258.8	1.93
Kansas	9.0	177.5	4.1	82.0	2.16

The average additional costs to the wholesale price were found to be 1.9 cents a pound for paying freight and icing charges on the butter while in transit to the wholesale market, 1.06 cents for the services of the wholesale receiver, .19 of a cent for storage, 1 cent to the jobber, and a total of 4.5 cents to the retail store. The total amount of these charges varied from the average according to the market in which Kansas butter was sold.

CONDITIONS IN LOCAL AND IN CENTRALIZER CREAMERY TERRITORIES COMPARED.

Comparisons of butterfat prices in Kansas with those prevailing in Wisconsin and other highly developed dairy farming sections have been frequently made, and invariably the conclusion drawn that something was wrong in Kansas. What the trouble was no one seemed to have really understood. No reliable information of a tangible sort was available to explain matters. Recently, however, a study of the marketing of

Wisconsin butter was completed and the results placed before the public in bulletin 270 of the Experiment Station of the University of Wisconsin. With the results of the study for Kansas completed, a comparison of conditions in Kansas and in Wisconsin, on the basis of actual facts, is possible. The differences rather than the similarities between the two regions are striking. Wisconsin had 26.66 cows per square mile in 1910; Kansas had only 9. At that time for each cow in Wisconsin there were only 1.6 persons, while in Kansas for each cow there were 2.3 persons. In other words, while Kansas had only a little over one-third as many cows per square mile as Wisconsin, she had one and one-half times as many people per cow to consume whole milk. This larger number of whole-milk consumers reduced the already small quantity of dairy products to a very small surplus of butterfat for creamery butter-making purposes. Figs. 33, 34 and 35 give striking testimony, by graphic presen-

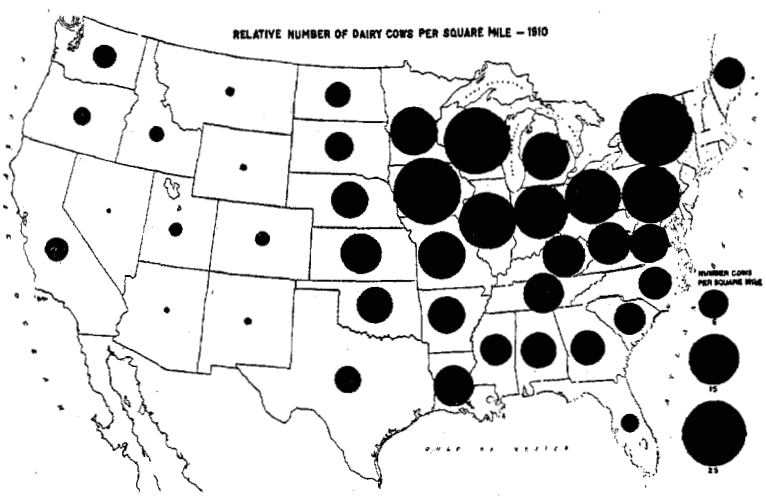


FIG. 33. Variation in Number of Dairy Cows Per Square Mile in the United States.

The number of dairy cows per square mile in any given 100 square miles or more of territory is one factor in determining the amount of dairy products available for their various uses. The efficiency of these cows is a second vital factor. This map shows the variation in the relative density of dairy cows in the United States, ranging from less than five per square mile in most states to thirty-two in New York.—[*Courtesy of the University of Wisconsin.*]

tation of the facts, of the very different conditions prevailing. It is no less important to note that where there were large numbers of cows per square mile there also were found the greatest numbers of creameries. Compare Figs. 35, 36 and 37. These large numbers of creameries were possible because great quantities of butterfat were available for butter-making within small areas. Fig. 38 graphically presents a comparison of the cows per square mile and butterfat sold per square mile, showing that farmers in Wisconsin sold 873 pounds, as against 177 pounds for Kansas farmers. The explanation of this difference lies chiefly in the fact that the average Wisconsin farmer milked twice as many cows as

the average Kansas farmer, and that because of his interest and the fact that dairying was a main line with him, better cows were kept than was the case in Kansas.

The three leading states in which small creameries have been a success are Wisconsin, Minnesota and Iowa. The available information for those states and Kansas, summarized and presented in Fig. 40, indicates the quantities of butterfat sold per square mile and the number of cows, on the average, for each section that are necessary to the maintenance of small creameries. Kansas sells less than half enough butterfat per square mile to support local creameries. The quantity of butterfat avail-

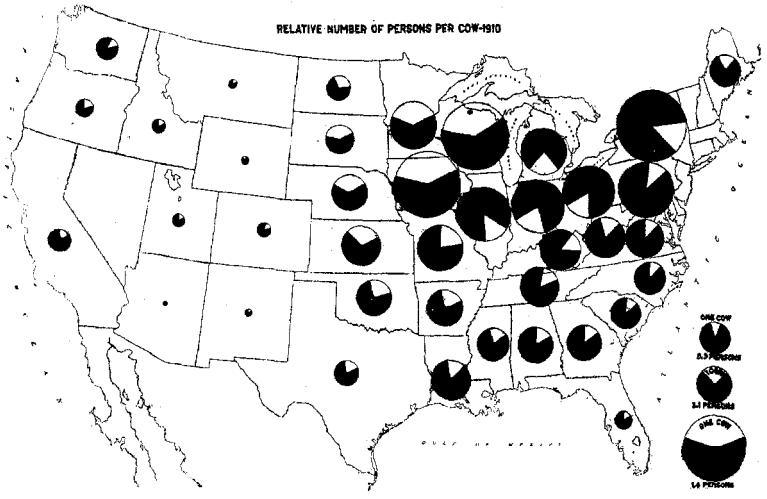


FIG. 34. The Variation in Number of Persons to Each Cow for the United States.

The amount of butterfat available for creamery butter-making purposes depends largely on the ratio of persons to cows. Plenty of cows in each square mile results in a large quantity of milk, which goes largely to butter-making only when there are so few persons that the product is not consumed. From this standpoint Iowa, Minnesota and Wisconsin each have greater available quantities of butterfat for creamery purposes than any other state in the Union.—[*Courtesy of the University of Wisconsin.*]

able is sufficient to support such a small number of creameries that they are necessarily far apart, and farmers are therefore unable to deliver their butterfat without the aid of shipment by rail and also to a large extent by engaging the services provided by cream stations.

The study in Wisconsin demonstrated that Wisconsin farmers, on an average, received 23.33 cents for the butterfat in a pound of creamery butter, when the Elgin price for the year averaged 28.78 cents. Kansas farmers received 21.06 cents for the butterfat in a pound of creamery butter, when the average Elgin price for the year of study, from July 1, 1915, to June 30, 1916, was 29.29 cents a pound. The Elgin price averaged .51 of a cent higher during the period of investigation in Kansas than it did during the period of study in Wisconsin. Therefore to the 23.33 cents received by Wisconsin farmers must be added the .51 of a cent before the results of the two separate investigations are directly

comparable. With this addition, it bcomes evident that Wisconsin farmers received for the butterfat in one pound of butter 23.84 cents, when Kansas farmers received 21.06 cents. The difference of 2.78 cents is readily explained by examination of the costs involved in mrketing butterfat through creameries in te two states. Wisconsin figures are

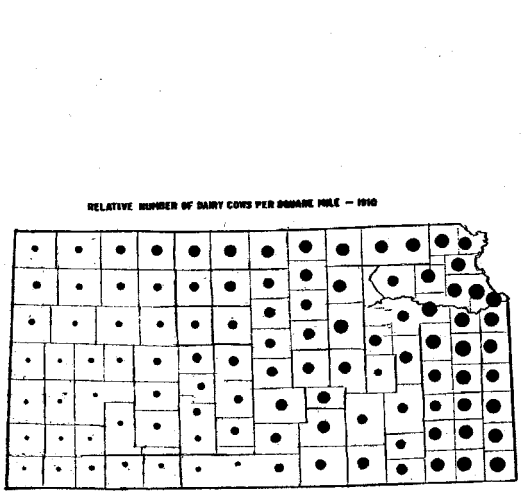


FIG. 35. The Number of Dairy Cows Per Square Mile in Wisconsin, Minnesota, Iowa and Kansas.

According to the scale in the illustration, each dot represents a certain number of dairy cows per square mile in the county. In Wisconsin the numher runs as high as seventy-six, in Minnesota fifty-six, and in Iowa fifty-six The highest in Kansas is less than twenty-three. From the standpoint of cows in Kansas, farmers do not have a large enough number of efficient dairy stock on each farm to provide the conditions essential to local creamery success such as has been made possible in parts of the other three states where the dots are larger. [*Courtesy of the University of Wisconsin.*]

for cooperative creameries, and the profits of the creamery business are included in the 23.84 cents received by the farmers. In Kansas the successful creameries are centralizers, operated by private enterprise, and the .81 of a cent profit secured by them is one of the expenses of marketing butterfat in Kansas. In Wisconsin farmers paid on an average 1.6 cents for hauling and draying butterfat and butter, while in Kansas the costs of getting butterfat to the creameries was 3.46 cents, or 1.96 cents greater than .in Wisconsin. These two items of expense, which are larger in Kansas than in Wisconsin, amount to 2.77 cents, or practically the entire difference in the net prices received by farmers in the .two

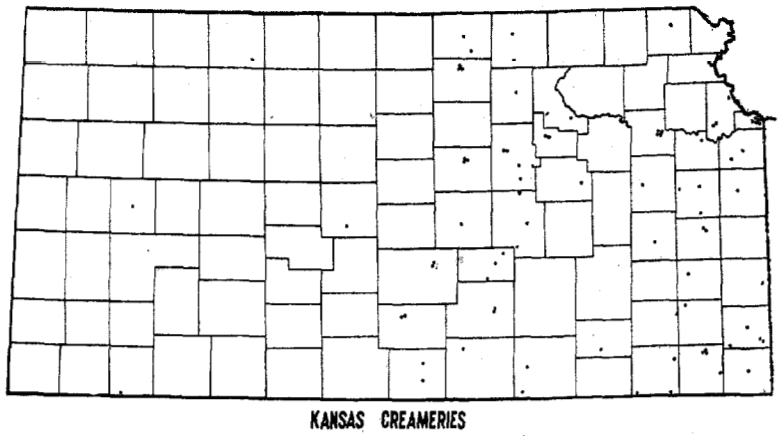


FIG. 36 Location of Kansas creamerles, 1915

Kansas had less than twelve cows per square mile in 1915, and her creameries numbered only seventy-eight of which twenty-five made more than 22 million out of the total of 24.2 million pounds of butter. A greater number of creameries is not warranted economically until the number of cows increases sufficiently not only to adequately feed the ones that exist but also properly to supply the new ones.

states. In Wisconsin it was found that cooperative local creameries retained for the farmers the profits of the creamery business and the savings of greater efficiency, due to the fact that cooperative creameries were larger than private plants. These two items amounted to 3 cents a pound of butterfat. Farmers in specialized local creamery sections produce from 1000 to 2000 or more pounds of butterfat each, so that cooperation in giving them from $30 to $60 additional income each year is worth their while. In Kansas, on the other hand, centralizer management is more complicated than local creamery management is in its special localities. Moreover, the average profit of centralizers, being only .81 of a cent a pound butter, and since centralizer patrons produce the butterfat that makes only 400 pounds of butter, the possible saving is only $3.24 a year for each farmer, an amount altogether too small to make it worth his while to bear the responsibility and risks of cooperative centralizer management. With respect to price comparisons, then, the difference in prices paid to farmers in Wisconsin and in Kansas was due entirely to prevailing economic conditions. Neither creameries nor individual farmers were to blame, and the suspicion that something fundamentally wrong existed was entirely erroneous.

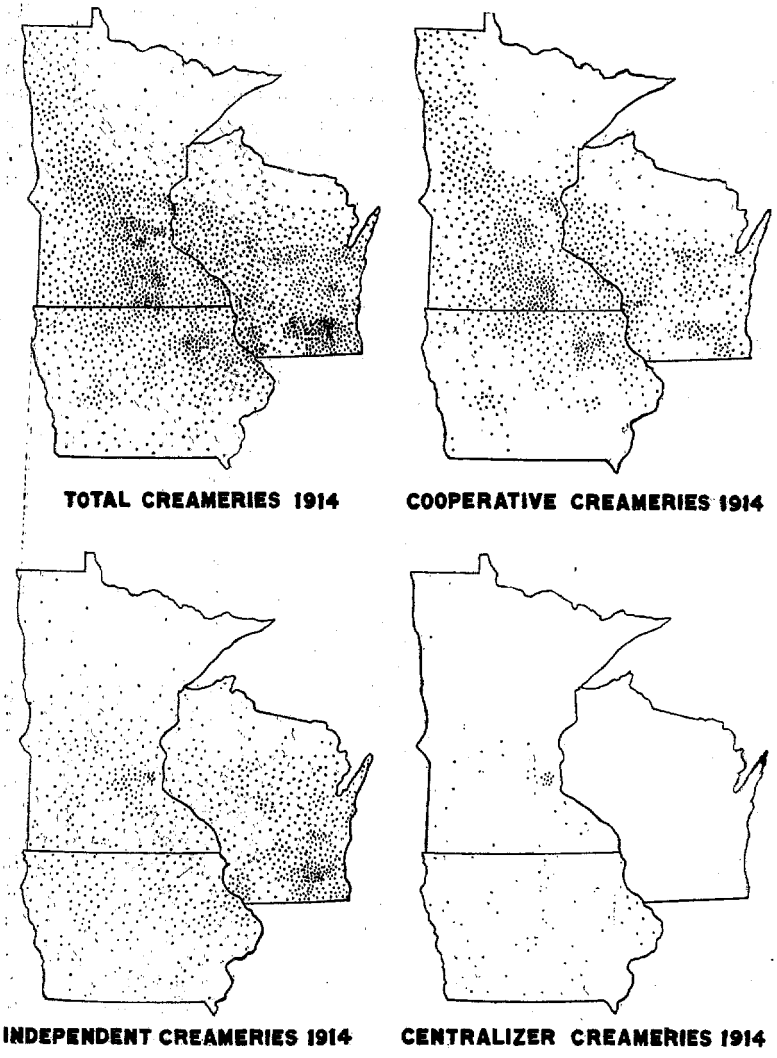


FIG. 37. The Creameries of Iowa, Minnesota, and Wisconsin.

In contrast to Kansas, which has but one creamery for each 1053 square miles, Iowa has a creamery for each 111 square miles, Minnesota one for each 95 square miles, and Wisconsin one for each 67 square miles. In the three last-named states there is sufficient butterfat in each hundred square miles to support a successful local creamery. In Kansas local creameries are relatively unsuccessful because there is on an average only one-fifth as much butterfat in each hundred square miles as there is in Wisconsin. This condition results in excessive costs for making and marketing butter by local creameries in Kansas and explains why they are not more plentiful.—[*Courtesy of the University of Wisconsin.*]

WHAT CAN BE DONE TO IMPROVE KANSAS BUTTER-MARKETING CONDITIONS.

CHANGE THE BASIS OF BUYING FARM BUTTER.

The facts pertaining to the marketing of farm butter indicate that stores paid first-grade prices for much low-grade butter, which was sold at a loss of from 6 to 8 cents a pound, resulting in an average loss

RELATIVE NUMBER OF COWS PER SQUARE MILE AND OF BUTTERFAT SOLD PER SQUARE MILE--1910

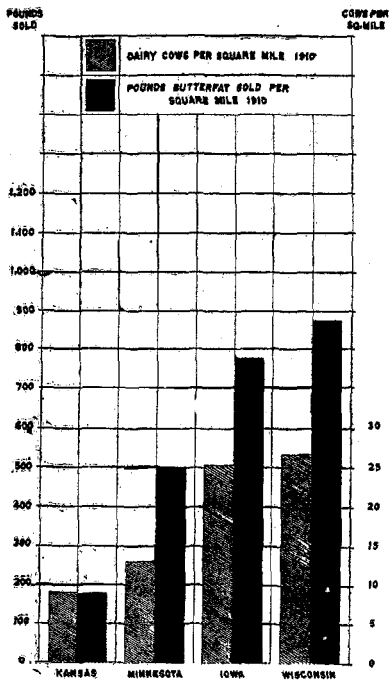


FIG. 38. Number of Cows and Pounds of Butterfat Sold Per Square Mile.

When a comparison of the available butterfat for creamery purposes is made for Kansas, Minnesota, Iowa, and Wisconsin, it is readily understood how different the conditions in these states are. Too little butterfat is produced in Kansas because there are too few cows per square mile and their quality is too low to expect results similar to those of the other three states where the farmers have specialized more in dairying.—[*Courtesy of the University of Wisconsin.*]

FARMS, DAIRY COWS AND POUNDS OF BUTTER FAT SOLD PER SQUARE MILE AND NUMBER DAIRY COWS PER FARM –1910

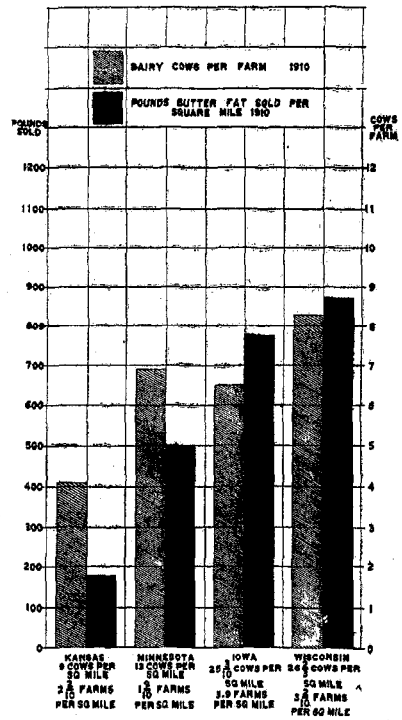


FIG. 39. Number of Cows Per Farm and Pounds of Butterfat Sold Per Square Mile.

This comparison of the number of cows milked for the average farm in each of the four states indicates how necessary it is in Kansas to have more and better cows per farm if enough butterfat is to be produced to reduce materially the costs of getting it to the creamery.—[*Courtesy of the University of Wisconsin.*]

on all the farm butter handled of 2.7 cents a pound. On the surface it would seem that the store and not the farmer is the loser. An examination of the method of operating the average store will convince the reader that this is not entirely the case. The costs of running a retail store must be entirely paid, otherwise the storekeeper will be forced out of business. Retail prices, therefore, must be fixed at a figure high enough to cover not only the price paid for the goods and the regular costs of running the store, but also high enough to make up any losses which occur, as, for example, the loss on butter handled, and provide a

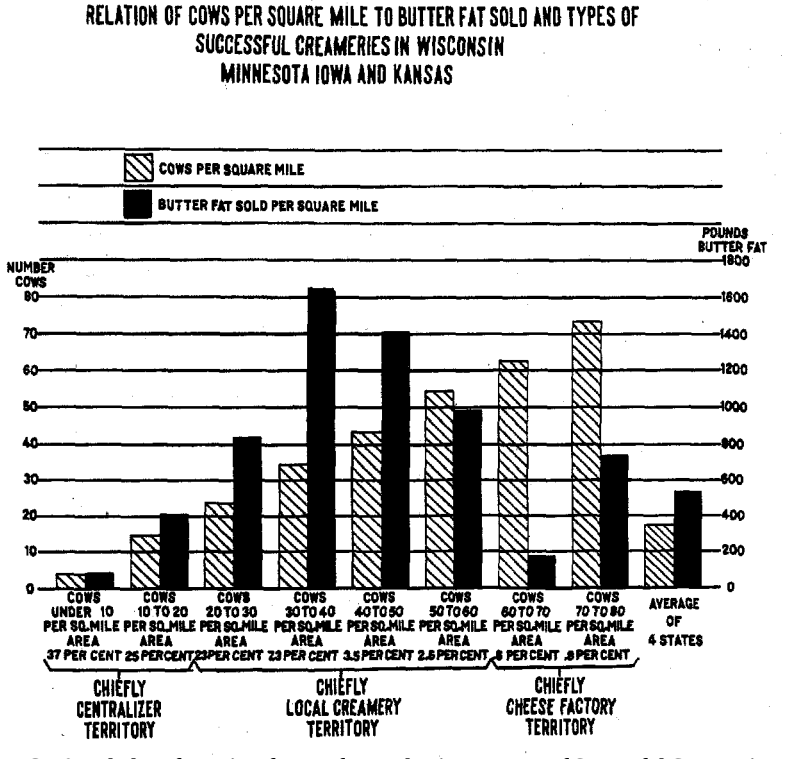


FIG. 40. Relation of Density of Butterfat Production to Types of Successful Creameries.

The four states for which information is summarized in the illustration cover an area of 273,844 square miles. It is interesting to know that 170,048 square miles, or 62 percent of these four states, an area more than twice as large as the state of Kansas, does not produce enough butterfat per square mile to support successful local creameries, and that centralizers are therefore an economic necessity. It will be seen that more than twice as much butterfat was sold per square mile in the local creamery territory as in centralizer territory, and that this was possible only because of the large number of cows. *-[Courtesy of the University of Wisconsin.]*

profit. If the store buys butter of all grades at the same prices and loses money it is forced to raise the retail price of the other goods sold sufficiently to cover this loss. All the patrons of the store pay for the loss occasioned by purchasing poor butter. If the store buys butter at a

price low enough to prevent a loss, then the farmers with good butter are underpaid. In either case the practice puts a premium on the production of low-grade butter. Stated plainly, as long as the system of buying butter without regard to quality continues, low-grade butter will be produced at a premium and farmers will suffer either because prices of goods bought at the store are unnecessarily high or because those producing good butter will not secure what it is worth. The most feasible

TABLE XXXII. Comparison of Dairy cows and butterfat sold by groups according to the given number of dairy cows per square mile.

GROUP SIZE.	Percent of area.	Dairy cows per square mile.	Pounds of butter-fat sold per square mile.	Dairy cows per farm.	Pounds of butter-fat sold per farm.	Number of farms per square mile.
Under 10 cows per square mile:						
Wisconsin	34.2	4.0	104.5	4.0	106.6	.98
Minnesota	46.0	3.0	80.5	4.5	121.1	.66
Kansas	55.2	4.9	89.0	4.0	73.4	1.21
10 cows and under 20 per square mile:						
Wisconsin	4.5	16.8	961.9	6.4	364.5	2.64
Minnesota	25.5	15.1	611.9	6.7	269.9	2.26
Iowa	18.7	17.9	361.8	4.6	93.9	3.51
Kansas	42.8	13.6	282.5	4.2	86.6	3.26
20 cows and under 30 per square mile:						
Wisconsin	20.4	24.0	1,286.6	6.8	364.9	3.52
Minnesota	19.8	24.6	904.0	7.4	272.9	3.31
Iowa	60.9	23.4	684.7	6.0	176.4	3.57
Kansas	2.0	21.1	366.3	4.3	74.0	4.93
30 cows and under 40 per square mile:						
Wisconsin	13.5	33.3	1,857.3	8.1	453.3	4.09
Minnesota	4.9	34.3	1,422.5	8.7	359.8	3.96
Iowa	15.4	35.2	1,571.1	8.7	387.1	4.06
40 cows and under 50 per square mile:						
Wisconsin	8.5	44.1	1,584.5	9.4	335.8	4.72
Minnesota	3.3	42.4	1,422.9	8.0	269.5	5.28
Iowa	4.2	43.0	1,036.5	10.6	256.8	4.03
50 cows and under 60 per square mile:						
Wisconsin	11.7	54.8	945.5	9.7	167.3	5.65
Minnesota	.5	52.7	2,470.0	10.0	466.2	5.30
Iowa	.8	56.2	332.2	12.4	78.3	4.53
60 cows and under 70 per square mile:						
Wisconsin	3.2	62.9	175.3	10.4	29.0	6.03
70 cows and under 80 per square mile:						
Wisconsin	4.0	73.3	735.7	13.3	133.4	5.51
All four state averages:						
Under 10 cows per square mile	37.0	4.0	88.8	4.1	91.7	.97
10 cows and under 20 cows per square mile	25.0	14.8	417.8	4.9	137.9	3.03
20 cows and under 30 cows per square mile	22.9	23.8	838.6	6.4	227.2	3.69
30 cows and under 40 cows per square mile	7.3	34.3	1,648.8	8.5	406.8	4.05
40 cows and under 50 cows per square mile	3.0	43.4	1,407.3	9.2	298.9	4.71
50 cows and under 60 cows per square mile	2.6	54.7	989.0	9.8	177.7	5.56
60 cows and under 70 cows per square mile	3.2	62.9	175.3	10.4	29.0	6.03
70 cows and under 80 cows per square mile	4.0	73.3	735.7	13.3	133.4	5.51
Total average 4 states	100.0	17.42	533.7	6.5	200.7	2.66

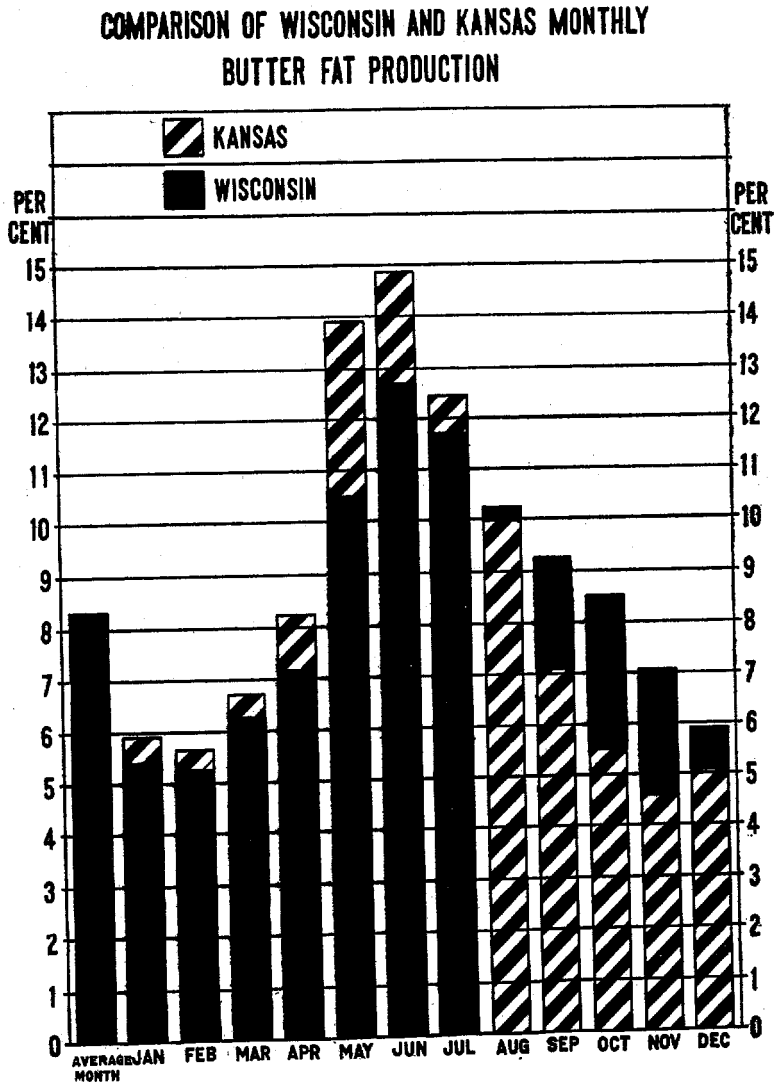


FIG. 41. Kansas Produces Butterfat in Greater Monthly Extremes Than Does Wisconsin.

Besides the great difference in the number of cows milked in any given area in Kansas as compared to the other states mentioned, the monthly variation in the amount of butterfat produced is greater. In the illustration the average monthly production is shown in the black column to the left. The columns for the months January to July show a striped part at the top indicating that Kansas produced a higher percentage of its output of butterfat in those months than did Wisconsin, while from August to December Wisconsin produced a higher percentage than did Kansas. The more the variation in the monthly receipts of butterfat by creameries the greater will be the necessary cost of manufacturing.

COMPARISON OF THE NET PRICE RECEIVED BY FARMERS FOR THE BUTTERFAT IN A POUND OF WISCONSIN AND OF KANSAS-MADE CREAMERY BUTTER.

Difference in Net Receipts by Farmers.	*Amount in cents.*	
Wisconsin farmers received in 1914 on a 28.78 cent Elgin market	23.33	
Kansas farmers received in 1915-'16 on a 29.29 cent Elgin market	21.06	
Difference in Elgin price during two periods of investigation	.51	
Correct Wisconsin price for comparison	23.84	
Correct Kansas price for comparison	21.06	**Higher Receipts of 2.78**
Amount more received by Wisconsin farmers	2.78	
Difference in Costs to Farmers.		
Cost of getting butterfat to creamery in Kansas	3.46	
Cost of getting butterfat to creamery in Wisconsin	1.50	**Balanced by Higher Costs of 2.77**
Greater cost to deliver butterfat to creamery in Kansas	1.96	
Profit of Kansas creameries	.81	
Total higher costs paid by Kansas farmers	2.77	

Taking economic conditions into consideration, Kansas farmers receive just as fair prices for butterfat as Wisconsin farmers.

FIG. 42. According to Economic Conditions Kansas Butterfat Prices are Fair.

The cost of getting butterfat in Kansas from the farmers to successful creameries is greater than in Wisconsin because so much less butterfat is produced in a given area that fewer creameries can operate and are therefore farther apart. When the average farmer lives about nineteen miles from a creamery instead of five he makes use of the railroad to get his fat to the creamery, because it is a cheaper method than to drive so far. But when the farmer has only a small amount of fat, which alone would not be worth shipping, in addition to being so far from a creamery, he takes it to some one who can gather a large enough volume of cream to reduce the cost of shipping. For this reason the cream station has been able to induce many farmers to milk that could not profitably do so in its absence. The difference in net price for butterfat in Kansas and in Wisconsin is due to the greater cost of concentration, which is unavoidable in a section where so few cows are kept and milked as a side line.

way of improving this situation is for the retailers of each town to agree that butter should be paid for according to grade, and after recognizing that individually they receive quantities too small to justify grading, either induce a cash butter buyer, provided with storage, to undertake the task, or else direct the farmers to the local produce buyer. In many towns this change has had excellent results. If some one concern could handle the entire volume of farm butter in each town there would be enough business to warrant efficiency. Prices would be more equitable to the farmers, not only for the butter which they sell but also for the goods which they purchase. The improvement which would follow a change of this character would enable the farmers who specialize in butter-making to continue on a more profitable basis. Those who now make poor butter would probably find it much more profitable to sell cream than to continue making butter.

MAKE BUTTERFAT PRODUCTION ONE OF THE MAIN ENTERPRISES ON THE FARM.

The farmer has three very important opportunities before him, each of which, if developed, would result in higher net profits on his butterfat business. One opportunity is to improve the quality of the cream so that it will reach the creamery without souring, and to insist on the payment for cream according to quality. Individually a farmer can not do this. Only when a large number of farmers producing a uniformly high-grade cream send enough of it to a given creamery to enable the creamery to place a special high-grade butter on the market will there be the possibility of increasing the present prices of butterfat. This is, however, a possibility waiting for development by farmers who will make dairying one of their main farm operations.

The second opportunity lies in the possibility of increasing the amount of butterfat to be sold to the creamery sufficiently to reduce the costs of delivering it. Increased volume of butterfat per farm not only reduces the cost of getting it to the creamery, but the increased receipts at the creamery result in lower manufacturing and marketing costs and make possible higher prices to farmers.

The third and most important possibility for the individual farmer is to reduce his cost of producing butterfat. Better cows, more judicious feeding, cheaper feeds and many other interesting efforts center on the problem of lower cost of production. It is an individual problem within the power of each farmer to solve by himself. The other two possibilities are dependent for success upon the efforts of other farmers and the creameries fully as much as upon the individual. Hence they are more difficult to solve than the last.

Each of these improvements necessitates that farmers double the number of cows per farm and make dairying a main-line enterprise instead of a side line as it now is.

STIMULATE EFFICIENCY IN CREAMERIES.

The very close relationship between volume of business and the cost of concentrating butterfat, making and marketing butter, emphasizes the necessity of promoting strength and abandoning the idea of protecting weakness in creameries. The more creameries there are among whom a given amount of butterfat must be divided by competition the more necessary it becomes to pay low prices. This problem involves the whole question of the wastes of overcompetition in comparison to the benefits of limited monopoly with proper regulation. One well-equipped cream station in each town could easily handle all the butterfat at a much lower cost than is necessary where two or three divide the supply. Competition in the cream business, which necessitates in many towns from four to seven stations, results in reduction of price to farmers which could easily be saved were such laws as antitrust laws, antidiscrimination laws and others designed to promote efficiency. The solution of this problem depends upon a better understanding of the relation of sound public ideas to good government and of good government to efficient business.

CREATE EFFICIENCY IN RETAILING BUTTER.

The greatest immediate improvement in the marketing of creamery butter may be realized by bringing about greater efficiency in the operation of retail stores. Volume of business per store at the present time is so small that individual delivery systems and unregulated credit grants have become unnecessarily expensive. Cooperative delivery systems and credit regulations, if instituted and upheld by retailers, would greatly reduce unnecessary retailing costs.