

Small dairies of the early settlers furnished pioneers with one of their most important foods, and with ready cash with which to pay current expenses. Iowa dairies now are factories marketing food products throughout the world.

19. Dairy Product Output From Iowa Farms

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FARM BUTTERMILKING HAS BEEN KNOWN FOR CENTURIES, for the servants of Abraham churned milk in a skin bag. No record is available as to when the dash churn was invented, but it was known by the time of the Iowa pioneers. At that, early Iowa settlers were not all equipped with a dash churn. Frequently they churned by agitating cream in any kind of utensil available. Mrs. N. Sanford writes about a Peter Newcomer who settled in Polk County in 1844:

Mr. Newcomer built his cabin, but he was often at a loss for many of the conveniences of civilized life. His good lady had no churn; necessity is the mother of invention; so taking a hollow log and scraping it smooth, he then put in a board bottom, fashioned out a dasher from a hickory pole, and the churn was made.

Most farm women knew how to make cheese, each following her own formula. Such cheese was generally consumed on the farms where it was made. But this was not enough to meet the demand, and cheese had to be imported. This demand interested some of the farmers in the production of cheese for market. George Acres and Watson Childs, of Delaware County, started to make cheese on their farms in 1858 or 1859. Acres increased his herd to about thirty cows by 1862. Childs was obliged to peddle his cheese for two or three years after starting and realized from eight to ten cents per pound, mainly in trade.

Another farmer who became a successful cheesemaker was Ara C. Bowen, of Bowen's Prairie, Jones County, who had come from Herkimer County, New York, where the manufacture of cheese was almost the only source of income to the farmer. Bowen started to make cheese on his farm in 1858 and sold during the year 1863 more than ten thousand pounds of cheese and some butter. In 1863 he erected a separate building, 20 by 40 feet for cheesemaking.

The first commercial cheese factory in Iowa probably was one

erected in 1866 at Delaware, by William M. Hefner and K. W. Kingsley. A building 24 by 40 feet, two-and-a-half stories high was erected, and an experienced cheesemaker, a woman from Madison County, New York, was employed. There might have been a cheese factory located in Lee County earlier, since certain citizens of Lee County exhibited at the first Iowa State Fair, held at Fairfield in 1854, a cheese weighing 360 pounds. However, this cheese probably was made on a farm with the co-operation of several farm dairies.

The cheese factories soon increased in number. The *United States Census* reports fourteen cheese factories in Iowa in 1870 producing 256,906 pounds of cheese. The number increased until 164 were reported in 1889. This number was never again equaled and sixty-eight discontinued operation the following year.

Milk for the cheese factory had to be delivered daily and required considerably better care than cream skimmed on the farm and collected once or twice weekly. In addition, the farmer felt that he could make more money by selling his butterfat to a creamery and feeding the skim milk to calves than by selling whole milk to the cheese factory.

Under such conditions the Iowa cheese factories were doomed to failure. In 1910 only five factories, making slightly less than three hundred thousand pounds of cheese, were reported. Later there was a slight increase until twelve plants were reported in 1916. This number rose to twenty-four in 1917, due to the establishment of ten new factories by D. J. Murphy, of Waukon. Murphy felt that Allamakee County was especially well adapted for cheese-making and that a dairy state such as Iowa should at least manufacture the cheese consumed within the state. He hoped to arouse others to follow in his footsteps, but as the basis for starting the plants was sentiment rather than business judgment, their life did not exceed more than three or four years. By 1922 the low number of five small plants was again reported. Following this there was a slight revival up to 1937 when twenty-seven factories manufactured 3,715,992 pounds of cheese.

In 1941 the United States Government asked for more cheese for the army and lend-lease. To comply with this request, twenty-three new cheese factories were started in Iowa. In 1942, forty-two plants produced 11,315,000 pounds of cheese. This production decreased to 7,500,299 pounds during 1943 and the number of cheese factories dropped to twenty-nine.

Realizing the unfavorable conditions for the manufacture of cheese in Iowa, the Dairy Industry staff members at Iowa State College had

for several years considered the possibilities for manufacturing special foreign types that could be sold at a price high enough to assure a sufficient milk supply. The amount of work that had been done on such types in this country was limited. Denmark, on the other hand, had carried on research at the government Experimental Creamery by which they had improved such types as Swiss, Blue Cheese, and Edam. A representative from the Dairy Industry Department of Iowa State College, who visited Europe in 1931, suggested to the director of the Danish Experimental Creamery that he select an outstanding student and train him in the manufacture of some of the more common foreign varieties. Fourteen months later Verner H. Nielsen arrived at Iowa State College as an assistant in dairy industry.

Nielsen had had several years' practical experience in Danish cheese factories and two years' experience at the Experimental Creamery. Research was started at Iowa State College on the manufacture of Swiss, Blue, and Edam varieties. Dr. B. W. Hammer and his assistants in Dairy Bacteriology were studying the mold that produced the best results in the manufacture of Blue cheese, and later developed the process of manufacturing Blue cheese from homogenized milk, a process that became generally employed by most American plants. The mold culture produced at the college likewise became standard among most American factories and many of such factories are supplied with the cultures direct from the Dairy Industry Department.

In Switzerland the Swiss cheese is made into large wheels weighing from 60 to 220 pounds. This type had been modified at the Danish Experimental Creamery to a cheese weighing about 30 pounds with rather small round holes in contrast to the larger holes of the imported Swiss. The Danish process was originally followed at the Iowa Dairy Industry Department but later the size of the cheese was reduced to 5 or 6 pounds, a size more satisfactory for marketing.

Cottage cheese is manufactured extensively from skim milk in Iowa. Blue, Swiss, and Edam cheese also can be manufactured profitably in the state. Up to the present time, several firms have adopted the Iowa process but have located most of their factories in other states where milk can be obtained at a lower price.

EARLY CREAMERIES IN IOWA

The first creamery in Iowa was started in April, 1872, by John Stewart at Spring Branch, three miles southeast of Manchester. Stewart was a butter dealer in Massachusetts. He came to Iowa to obtain butter to be shipped to his partner A. C. Clark, who took

charge of the business in the East. In 1869 Stewart bought two carloads of Iowa butter which were sold at a fair profit. The following year he purchased as much as was obtainable, reworked it, and shipped it to Clark at a loss.

Stewart was convinced that for the establishment of a satisfactory outlet in the East it would be necessary to have a product of high and uniform quality. He consulted Matthew Van Deusen, who was engaged in the produce business at Manchester. Van Deusen, in February, 1872, made a trip east to visit the dairy of a Mr. Boyse who used the output from his herd of 75 cows to make butter which sold in Chicago for 45 cents per pound. Van Deusen studied Boyse's method of manufacture and marketing and became enthusiastic about the system. After his return to Manchester, Van Deusen and Stewart canvassed the territory around Spring Branch and reported:

A meeting was called in March, 1872, at the school house in the neighborhood, and was well attended by the dairymen. A proposition was submitted to pay them 65c per 100 lbs. for the season. After the matter had been fully discussed, they accepted, and the milk from about 300 cows in a two-mile radius was pledged. In thirty days from the time of this meeting the creamery opened for business. The system adopted the first season was the shallow pan dry setting system. Square box churns were used propelled by horse power. The butter worker was the roller hand worker. The whole outlay on building and machinery and blind horse, did not exceed one thousand dollars.

Stewart obtained quality. His butter won first prize at the St. Louis Exposition in 1874 and first and second prizes in 1875. This encouraged him to make an exhibit at the Centennial Exposition in Philadelphia in 1876 where he won first prize and the gold medal.

Stewart was now operating three or more creameries. He selected a sample of butter for the exposition from each of three creameries, never divulged who had made the prize tub, but he had three medals cast in bronze, duplicates of the gold medal, and presented one to each of the three buttermakers.

Stewart's business partner, A. C. Clark, came to Manchester in 1872 and the following year started a creamery there, the second creamery in the state. Stewart soon started creameries at Sand Spring, Lamont, and Strawberry Point. Henry C. Neiter built a creamery at Walker about 1877 or 1878 and J. G. Cherry, founder of the J. G. Cherry Company, was employed as buttermaker. In 1875 H. D. Sherman built at Monticello the first creamery in Jones County. He erected a line of fifteen creameries known as the "Diamond Creameries." Sherman exhibited butter at the International Fair in New York in 1878 and 1879 and won the sweepstake prize both years.

CO-OPERATIVE CREAMERIES

State Dairy Commissioner R. G. Clark claimed the first co-operative creamery was built in 1877 at Spring Branch, near the John Stewart Creamery. This was later confirmed by Henry Brayton, who had been the buttermaker. He and Mrs. Brayton started housekeeping in rooms above the creamery. Part of the walls of this creamery are still standing. This creamery also has been referred to as the Brayton Creamery, thus indicating that it might have been owned by Brayton.

In 1896 E. C. Bennett, of Oelwein, a well-informed dairyman, made the following statement before the State Agricultural Society:

It may be interesting to know what became of this primitive creamery that won the gold medal in 1876. It did business at the old stand until 1880 when it was replaced by Mr. Brayton (on whose land it stood), and operated by him until 1887, when the patrons organized as a co-operative creamery company and leased the creamery for ninety-nine years.

Sam Shilling, who spent his early years at Manchester and worked for John S. Stewart for one year, claimed the Maynard Creamery to be the first co-operative creamery in the state.

On June 10, 1875, articles of incorporation were filed for "Long Grove Dairymen's Association" at Maynard. Capital stock was \$1,000 issued at \$10 per share, each share to have one vote. The corporation was for the purpose of conducting a cheese business. This creamery was later rented to John Stewart who operated it as a creamery for one year, but since he met with business reverses in 1877 the creamery was closed until April 15, 1878. It was then opened by the farmers as a co-operative creamery with Sam Shilling as buttermaker.

From this early beginning creameries were built at a rapid rate. The following from the ninth annual report (1895) of the state dairy commissioner gives a fair estimate of how rapid this increase was. The commissioners sent a letter to each of the creameries operated in the state "Out of the 774 creameries 580 answers were received, from which the following information:

Creameries built from 1870 to 1875	8
Creameries built from 1875 to 1880	36
Creameries built from 1880 to 1885	41
Creameries built from 1885 to 1890	172
Creameries built from 1890 to 1895	323

This large increase in creamery construction in the nineties was largely due to the activity of the creamery promoter, who was more

interested in collecting money from the farmers than in rendering service to the industry. Several of the creameries that had been started were soon closed. Some of the promoted creameries did not even open for business. It was discovered after the creameries were built that there was not sufficient milk being produced for operating.

In 1899 there were 779 creameries and 188 skimming stations. This was followed by a gradual decrease until it reached the low of 398 creameries in 1919, after which there again was a gradual increase until they numbered 488 in 1940.

GATHERED CREAM SYSTEM

When the creameries were first started, milk was delivered twice daily and set in shallow pans for the cream to rise by gravity. This involved much labor and difficult hauling because of poor roads. In 1877 A. M. Bingham, of Jesup, built a creamery at Spring Creek, near Jesup. Bingham encouraged farmers to skim the milk on the farm and deliver several days' cream at one time. This method, which became known as the gathered cream system, meant poorer quality, since the cream would generally be held on the farm several days. It improved the hauling situation, however, which meant greater inducement for the erection of creameries.

CENTRIFUGAL CREAM SEPARATOR

In 1878 Dr. DeLaval, of Stockholm, Sweden, invented his first power-driven centrifugal cream separator, with a capacity of three hundred pounds of milk per hour. By 1881, when the first DeLaval machines were shipped to America, the capacity had been increased to seven hundred pounds an hour.

Another centrifugal cream separator invented in Denmark appeared at the same time. The first of the Danish separators brought to America was shipped to Canada in April, 1882. The second was brought to Iowa in July, 1882, by Jeppe Slifsgaard who operated a creamery about seven miles from Waterloo. This was the first separator operated in an Iowa creamery.

The introduction of the separator marked a great step forward. It now became possible to collect milk from a comparatively large territory, have it separated at the creamery and the skim milk returned to the farms the same day.

Another improvement essential to the successful operation of a commercial creamery was a satisfactory milk and cream test. Several

tests had been tried but none of them were satisfactory until Professor G. E. Patrick of the Iowa Agricultural College in 1889 invented a test named after him. This test was a year in advance of the Babcock test which later, because of its simplicity, became generally adopted.

CENTRALIZED CREAMERIES

In 1900 the Hanford Hazelwood Cream Company was started in Sioux City, the first large, centralized creamery in the state. At that time Sioux City was surrounded by small whole-milk co-operative creameries making butter of rather irregular quality. The Hanford Hazelwood Cream Company bought the cream from many of those creameries and received it in sweet condition at the central plant. It was manufactured into a uniform, high-quality butter which brought higher prices. The company was able to pay a better price for cream than the small plants.

In 1885 the DeLaval hand separator was introduced in America and by 1890 there were several thousand of them in use. By 1900 use of this machine increased rapidly in Iowa and resulted in various small centralized creameries. Those creameries depended almost entirely on hand-separated cream, much of which was shipped to the creameries by rail.

This cream was generally of inferior quality, but with their superior marketing facilities the centralizers outbid the weaker local creameries and compelled many to discontinue.

The centralizers, in order to obtain business, emphasized volume rather than quality. As a result the quality of Iowa butter deteriorated. The Hanford Hazelwood Company, founded on quality, became a strictly hand-separator creamery in 1904, the largest creamery in the world.

Local creameries did not receive cream by rail nor did they operate cream receiving stations. Because roads at certain times of the year were about impassable, the territory from which local creameries drew cream was limited. After the State Highway Commission was established in 1913, improvement of roads was started. The more progressive local creameries increased in volume, forcing many of the smaller plants out of business. Centralizers, because of poor quality and excessive cost of operating cream receiving stations, were unable to compete with well-organized and efficiently operated local plants. Centralized creameries were making only 20 per cent of the Iowa butter in 1940, compared to 39 per cent made in 1923.

REVIVED INTEREST IN BUTTERMILK

Buttermaking in Iowa showed little increase for many years. In 1890 Iowa produced seventy-one million pounds of creamery butter. In 1898, 811 creameries produced nearly eighty-eight million pounds and in 1920, 399 creameries produced eighty-nine million pounds. Then came a rapid increase in butter production and a gradual increase in number of creameries until 488 creameries in 1940 produced nearly 245 million pounds of creamery butter.

ICE CREAM INDUSTRY

Ice cream has been used for centuries in Europe as a dessert served in the home of the aristocracy. It was served in the United States as early as 1774. An advertisement of ice cream appeared in a New York paper as early as June 8, 1786.

The first ice cream factory in Iowa was started by Frank D. Hutchinson at Sioux City in 1890. On July 4, he shipped nearly three hundred gallons of ice cream, all frozen by hand power. In 1901 the Hanford Hazelwood Cream Company installed ice cream equipment and employed an ice cream maker who was formerly a pastry cook at a prominent Chicago hotel. The Hazelwood ice cream was extensively advertised, and the Hanford Hazelwood Company was for several years the largest ice cream manufacturer in the state.

In 1907 F. D. Hutchinson started a factory at Cedar Rapids and in 1909 he purchased the McFarland Ice Cream Company in Des Moines, which had been started as a wholesale business in 1902. These three factories were operated as one company until 1926 when the Des Moines plant was sold to C. J. Hutchinson and the Sioux City factory to W. and Ed. Hutchinson. F. D. Hutchinson retained the Cedar Rapids factory which over the state at one time had twenty-five branches, organized from 1920 to 1925. The Hutchinson Ice Cream Company of Des Moines was sold to the Beatrice Creamery Company in 1929, and in 1930 the Hutchinson Ice Cream Company, Cedar Rapids, was sold to the Borden Company.

The Hutchinson brothers, especially Frank, were for many years the leaders in the ice cream industry in the state. Another active leader is P. W. Crowley, who has served the Iowa Ice Cream Manufacturers' Association as secretary since 1919. In 1943, 579 ice cream factories were operated in Iowa.

MARKET MILK

Pioneers brought their cows along when settling on Iowa soil. Town dwellers at first would keep a cow or two to furnish milk for

the family. As towns became larger, family cows gradually disappeared except from homes located in the outskirts. Farmers living nearby started to produce milk for the townspeople. Milk was hauled around in a milk can with a quart measure hanging on the outside of the can, exposed to flies and dust. There was no sanitary standard, for few persons suspected that contaminated milk could in any way endanger the health of people.

The legislature established a State Board of Health of nine persons in 1880: the attorney general, a civil engineer, and seven physicians. This board adopted in 1889 the following standard for milk:

	Percentage
Water (maximum)	86.87
Butterfat (minimum)	3.50
Milk sugar (maximum)	4.35
Salts (maximum)	0.60
Ash (maximum)	0.70
Casein (maximum)	3.98
Total	100

This standard served to prevent skimming and adulteration of the milk, a rather common practice, but it was of no value as a sanitary standard. Later a sanitary standard was introduced by the state dairy commissioner and not by the State Board of Health.

The office of the state dairy commissioner was established in 1886. Through its efforts the legislature adopted the first sanitary standard in 1892. This standard read in part as follows:

If any person or corporation shall sell or exchange, or expose for sale or exchange, deliver or bring to another for domestic use, or to be converted into any product of human food whatsoever, any unclean, impure, unhealthy, adulterated, unwholesome or skimmed milk, or milk from which has been held back what is commonly known as strippings or milk taken from an animal having disease, sickness, ulcers, abscess or running sore, or was taken from an animal fifteen days before, or less than five days after parturition, shall upon conviction thereof be fined not less than twenty-five dollars nor more than one hundred dollars, or be liable in double the amount of damages to the person or persons upon whom such fraud shall be committed. Provided that the provisions of this act shall not apply to skimmed milk when it is sold as such.

The same standard reduced the fat standard in milk to 3 per cent. It also authorized the dairy commissioner to appoint milk inspectors in every city having over ten thousand inhabitants. Every dealer was required to obtain a permit from the state dairy commissioner.

The standard required an adequate force of inspectors. Since the

amount of time city inspectors were able to devote to inspection service was limited, and there was a shortage of state dairy inspectors, the milk inspection was much neglected until 1911 when Dr. O. P. Thompson was appointed state dairy inspector in charge of market milk inspection.

Through the efforts of the principal milk distributors in the state, the state dairy commissioner, the State Board of Health, the State College, and other educational agencies, the market milk industry has made great strides since 1900. Pasteurization, sanitary handling, eradication of tuberculosis from dairy cattle, and the present effort to eliminate the source of undulant fever all tend to produce a market milk of outstanding quality.

CONDENSED AND POWDERED MILK

The condensed milk industry in Iowa has, like the cheese industry, suffered because farmers prefer to keep the skim milk on the farms for stock feeding. The Waverly Condensery was started by R. G. Fraser and Company in 1899. This plant shifted from one owner to another until purchased by the present owners, Carnation Company. The Van Camp Packing Company started a condensery at Perry in 1908. Daily receipts of milk had in the summer of 1910 reached one hundred thousand pounds. The plant was operated by the original owners for only a few years and was listed by the Iowa State Secretary of Agriculture in his annual report of 1943 as a creamery.

The state dairy commissioner's report of 1920 gives the value of the condensed milk produced by the two plants at \$733,521.34. During later years some of the larger city milk plants have condensed part of their surplus milk while the larger creameries installed drying equipment for drying buttermilk. World War II brought about abnormal conditions. The United States Government appealed to the dairy interests to produce great quantities of condensed and powdered milk. Dairy plant operators made an effort to meet that demand and in 1943 seven plants in the state were producing condensed milk and ten plants were producing milk powder. In addition, thirty-nine creameries were drying buttermilk.

MARKETING DAIRY PRODUCTS

Early settlers generally brought cows along to furnish the family with butter and cheese as well as milk. As cattle increased, more butter was produced than was required for home consumption. That created the problem of marketing. Butter intended for marketing would be

shaped into rolls, wrapped with muslin and brought to the grocery store to exchange for groceries. The grocer sold part of it to the townspeople, and the rest to butter packers who would rework it, thus making a somewhat uniform product from the numerous rolls that originally were of various color and flavor. This butter, generally sold under the name "ladle," was naturally of poor quality. Dealers searching for some method to improve the quality devised a process by which the butter was renovated and marketed under the names of "renovated" or "process butter."

This process consisted in melting the butter, allowing the curd and salt to settle and be drawn off. Air was then forced through the molten fat to remove undesirable odors. Milk was mixed with the fat, and the mixture was sprayed into ice water to solidify in granular form. Sour milk (starter) was generally added to the granules in sufficient amount to churn the mixture and the further treatment could correspond to that of natural butter.

This butter was frequently sold for creamery butter until Congress passed the act of May 9, 1902, requiring that it be properly labeled. Iowa, with thirteen process plants, led the states in processing. The Iowa Pure Butter Company, of Keokuk, was possibly the first to renovate butter in Iowa with the J. L. Humphrey Company, of Hume-ston, a close second.

Early settlers were in particular need of marketing facilities. The state was almost without roads. Another handicap to outside marketing was the lack of railroads. Shipments had to be made by boats. Such shipments of produce were made as early as 1844. It was evident that butter shipped to eastern markets by boat and without refrigeration would not arrive in the best condition. Western butter was therefore considered to be of much inferior quality and there was no demand for it except when the eastern states were unable to supply the amount needed. This prejudice continued even after shipments were made by rail. The injustice in this discrimination was emphasized by Halstead Fitch, a well-known New York commission merchant, in a communication to the Iowa Dairy Association in 1889:

The phenomenal strides made, not only in the quantity but in the quality of western butter, vastly greater than in the East, has been achieved against and in spite of strong opposition. The writer remembers well the strong prejudice that existed against western butter a few years ago in the eastern markets. If the butter came from the extreme western township of New York or Pennsylvania, all right; but if it came from Ohio, twenty miles farther west, it was not to be compared with it. At that time nearly all the finest butter came to market in return pails, and the writer conceived the idea of sending these return pails to Ohio to be filled

by some of the finest dairies and creameries of the Western Reserve. A shipment of creamery butter came in from that state, part in tubs and part in New York labeled return pails, but all of precisely the same butter. The tubs were shown to a fastidious grocer uptown. He noticed they were Ohio made and indignantly remarked: "You ought to know that I cannot use western butter for my trade, I want nothing but the finest state." He was urged to lay aside his prejudices and judge the butter on its merits. He tasted it, but reiterated his assertion that he could not use it under any circumstances. One of the pails was then shown him, precisely the same creamery and the same invoice. He smacked his lips over it, remarking: "That is the kind of butter I want; I could tell state butter with my eyes shut." The butter was sold—so was the customer, for he paid 3 cents more a pound for it than he could have bought the tubs for.

IOWA BUTTER KNOWN FOR QUALITY

Iowa first became recognized as a producer of fine butter in 1876, when John Stewart won the sweepstakes prize for his butter exhibited at the Centennial Exposition in Philadelphia. This was worth millions of dollars to Iowa milk producers, since Iowa butter became known as the finest butter sold in the eastern markets. Eastern buyers came to Iowa willing to buy butter at a premium. As the creameries become more numerous throughout the state a marked improvement in quality followed and Iowa butter continued to enjoy an outstanding reputation in the eastern markets. It was generally marketed through the commission houses, usually at 5 per cent commission. Little effort was made to market direct until after the establishment of the centralized creameries.

IOWA STATE BRAND BUTTER

In 1900 a special brand designating quality was adopted for Danish butter. In 1904 the Netherland Government authorized the butter control stations of that country to use a similar brand. Comparable steps were taken in New Zealand, Australia, and other countries. In 1915 a butter trademark was established in Iowa. Control was left with an executive committee composed of the president of the Iowa State Dairy Association, the president of the Iowa State Buttermakers' Association, the dean of the Division of Agriculture of the Iowa State College, the professor of dairying of the same institution, and the state dairy and food commissioner. Permission for the use of this brand was granted to creameries producing butter scoring 93 points or better and manufactured in a creamery scoring 85 or higher in accordance with the state score card. The first creamery qualified to use this brand was the Strawberry Point Farmers' Creamery which in May, 1916, obtained License No. 1.

Ever since the establishment of the Iowa State Brand for butter,

consideration had been given to the organization for marketing Iowa State Brand butter. This did not become a reality until April 11, 1927, when such an organization was started with headquarters at Davenport, with \$1,300 paid-up capital stock.

The original plan for this association was to establish a market for Iowa State Brand butter in the Tri-Cities and after this had been accomplished to start a more general advertising campaign. H. A. Harmison, a graduate of Iowa State College and a member of the Dairy Industry Extension staff, was selected as manager. He soon discovered that the plan would take a long time before a sufficient outlet would be developed for the total amount of State Brand butter produced, so the plan was changed. On Thanksgiving Day, 1927, the entire equipment was brought to a Mason City headquarters in the E. B. Higley Cold Storage plant. A central print room for the creameries in north-central Iowa was set up, and a campaign was started to sell butter throughout the United States. Sales for the first year at Mason City amounted to about one and one-half million dollars with a profit of over twenty thousand dollars. This was all accomplished on a paid-up capital of \$1,300.

Harmison left the organization in 1931 and Roy O. Storvick followed him as manager. Storvick had graduated from Iowa State College with an advanced degree in Dairy Industry and had served for some years as a Dairy Industry extension specialist. During his management, sales increased from eight million pounds of butter in 1931 to twenty-three million pounds in 1943. The association was then serving eighty-nine creameries and had a net operating profit of \$129,818. In 1932 a supplies and equipment department was started, and a cheese sales department was added in 1934. A. L. Ronneberg, a graduate from the University of Minnesota, took charge after the resignation of Storvick in 1943.

A smaller marketing association was organized by southern Iowa creameries in 1934 with headquarters at Keosauqua. C. M. Reeve, manager of the Keosauqua Creamery, also served as manager of the marketing association. This association was merged with the Iowa State Brand Creameries in 1943.

Small dairies of the early settlers were of great importance to the welfare of pioneers, for they furnished them with the most important food of their diet and with ready cash with which to pay current expenses. This often was enough to retire farm mortgages. Farm dairies gradually developed into factories producing food products to be marketed throughout the world. The year 1944 brought to the

Iowa farmers an income of more than \$141,000,000. The 6.7 billion pounds of milk produced were converted into products as follows:

	Percentage
Creamery butter	72.5
Farm butter	1.4
Market milk and sweet cream	15.3
Ice cream	1.5
Cheese	1.5
Used on farms	7.8
Total	100

Iowa, due to its distance from the large cities and its high production of beef and pork, has for the past forty years placed greatest emphasis on the manufacture of butter, and has for several years occupied second place as a butter producer. Iowa manufactured during the year 1944 nearly 212 million pounds of creamery butter or over 14 per cent of the product made in the United States.