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TWENTY-SIXTH ANNUAL REPORT

OF THE

STATE DAIRY COMMISSIONER

TO THE

GOVERNOR OF THE STATE OF IOWA

FOR THE YEAR 1912

W. B. BARNEY
STATE DAIRY COMMISSIONER

PRINTED BY ORDER OF THE GENERAL ASSEMBLY

DES MOINES: EMORY H. ENGLISH, STATE PRINTER 1912

LETTER OF TRANSMITTAL

TO HIS EXCELLENCY, B. F. CARROLL,

Governor of Iowa.

Sir:—In compliance with the law, I have the honor to submit herewith the twenty-sixth annual report of the Dairy and Food Commissioner.

W. B. Barney,

Dairy and Food Commissioner.

Des Moines, November 6, 1912.

IOWA STATE DAIRY AND FOOD COMMISSION.

W. B. Barney
B. C. Iliff
O. P. Thompson, M. D
J. J. Ross
T A Clarke
G. H. Tellier
P W Crowley
H. E. Forrester Asst. Dairy Commissioner and Food Inspector
I. I. Flickinger
M. E. FlynnFood Inspector
C. OttosenFood Inspector
E. C. HinshawFood Inspector
S. O. Van DeBogartFood Inspector
J. W. Milnes

EXPENSES OF THE DAIRY AND FOOD DEPARTMENT OF THE OFFICE OF DAIRY AND FOOD COMMISSIONER FOR THE YEAR ENDING NOVEMBER 1, 1912.

Commissioner's salary\$	2,700.00	
Commissioner's expense	450.36	
_		
Denutry Commissionarie asterio	1 000 00	\$ 3,150.36
Deputy Commissioner's salary\$	1,800.00	
Deputy Commisioner's expense	76.12	
		1.876.12
Dairy Inspector's salary\$	1,600.00	
Dairy Inspector's expense	1,291.81	
- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		2.891.81
Asst. Commissioner's salary\$	1,400,00	2,091.01
Asst. Commissioner's expense	856.62	
_		
Anna Committee of the C	1 100 00	2,256.62
Asst. Commissioner's salary\$	1,400.00	
Asst. Commissioner's expense	970.83	
		2,370.83
Asst. Commissioner's salary\$	1,600.00	
Asst. Commissioner's expense	1,123.64	
		2,723.64
Asst. Commissioner's salary\$	1,600.00	2,120.01
Asst. Commissioner's expense	885.61	
Asst. Commissioner and Food Inspector's salary\$	1,599.98	2,485.61
Asst. Commissioner and Food Inspector's expense	1.047.98	
	1,011.00	
		2,647.96
*Asst. Commissioner and Food Inspector's salary\$	186.64	
*Asst. Commissioner and Food Inspector's expense.	129.37	
		316.01
Food Inspector's salary\$	1,591.11	
Food Inspector's expense	717.98	
		2,309.09
Food Inspector's salary\$	1,453.33	2,000.00
Food Inspector's expense	876.10	
Food Inspector's salary\$	1,600.00	2,329.43
Food Inspector's expense	971.94	
Food Inspector's expense	311.34	
		2,571.94
Food Inspector's salary\$	1,600.00	
Food Inspector's expense	712.58	
		2.312.58
		_,012.00

^{*}Does not include a complete year.

Food Inspector's salary\$ Food Inspector's expense	1,566.68 839.15	
Clerk hire (Dairy and Food)\$ Clerk hire (Dairy and Food)	750.00 750.00 150.00 145.00	2,405.83
Janitor hire (Dairy and Food)\$	780.00	1,795.00 780.00
Milk Agent's fees\$	2,649.00 162.75	
Office expenses, miscellaneous		2,811.75 421.34 313.41
Less salaries that are not paid from the Dairy and Food appropriation		\$ 38,769.33 24,272.74 \$ 14,496.59

FEES EARNED BY THE DAIRY AND FOOD COMMISSION FOR THE YEAR ENDING NOVEMBER 1, 1912.

Inspection fee tags\$	11,434.52
Seed analysis	71.00
Feeding-stuffs analysis	5.00
Stock food licenses	1,800.00
Milk licenses	2,191.00
Babcock test licenses	6,547.50

*\$22,049.02

REPORT OF COMMISSIONER

In looking up data in this office, we find that the first report made by the Dairy Commissioner was published with the proceedings of the Agricultural Society and that this report covered six months and was under date of November 1, 1886. On November 1, 1887, the Honorable H. D. Sherman made his second report to the governor, Wm. Larrabee, covering the first eighteen months following the enactment of the Dairy Law. This report showed that one assistant or clerk was employed. Little data had been kept as to the amount or value of Iowa dairy products up to this time. The report does not show much of promise in the situation.

Later enactments of the Legislature made this Department responsible for the enforcement of the following laws:

PURE FOOD LAW
WEIGHT AND MEASURE LAW
AGRICULTURAL SEED LAW
CONCENTRATED FEEDING STUFFS LAW
CONDIMENTAL STOCK FOOD LAW
PAINT AND LINSEED OIL LAW
TURPENTINE LAW

The foregoing statement of expenses of this Department includes the salaries of the Commissioner, Deputy Commissioner, State Dairy Inspector, four Assistant Dairy Commissioners, two Assistant Dairy Commissioners and Food Inspectors, five Food Inspectors, and the clerical help in both Dairy and Food Departments. The janitor though paid by this Department does the work in the Veterinary Department also.

We have not thought best to discuss matters in this report pertaining to the enforcement of these laws only as they are incidentally connected and have to do with the dairy work. It is obvious to all that a good sanitary law would be most helpful in bringing about better conditions in dairying as well as in all other branches of the various industries that are connected with food

^{*}Fines for violation of the food and dairy laws are paid into the school fund of the county where prosecution is brought. The amount so collected does not appear in the above statement.

products. Therefore, our recommendation that a sanitary measure be enacted.

Up to the time of the Civil War a very large proportion of our people lived on farms. They had very little to sell and bought less. Many of us recall the days when a little sugar, tea, coffee and spices, was about all that we bought of the grocer or at that time, the general store. There were practically no eatables offered for sale in eans or cartons, as many of the products that the housewife depends upon her grocer for now, were then prepared on the farm or in the home. The farmer raised his own grains taking them to the local mill to be ground, the miller taking his share in the shape of toll for the grinding, the farmer taking what was left, if there was any. Even in those days protection by the enactment of a just law would have been helpful. The farmer raised his own meats. Cattle, hogs and sheep were killed on the farm. The packer was practically unknown as the farmer cured his supply of meat during the winter for the ensuing year. Creameries had not been thought of, as all butter was made on the farm. We had no reason for the enactment of an "oleo" law as this product was not known.

Conditions have changed in the last half century and we have little idea of the man who raises our grains or grinds our flour, or who our butcher is, or who furnishes us with our butter, eggs, and poultry. The man who produces it to sell has little knowledge of who will consume it. This is a commercial age and naturally the man who has any kind of a product for sale desires to get out of it all that he possibly can. The larger percentage of the people engaged in the business are selling dairy and food products without misrepresentation or adulteration. There are people who for the sake of profit are unscrupulous enough to adulterate and misrepresent these products. Therefore, the necessity of enacting laws and the appointment of officers, whose duty it is to see that these laws are enforced as a matter of protection to the people.

HELPFUL ACTS OF THE THIRTY-FOURTH GENERAL ASSEMBLY.

The last legislature did much to strengthen the dairy and food laws as well as making possible the enforcement of all laws by giving the commissioner power to withhold or revoke licenses of the operators of the Babcock Test or that of a milk dealer. Great discretion should, and has been, used in this work and only in extreme cases have we felt obliged to revoke these licenses. The great good that results from this kind of a law is that it may be used as a "Big Stick" in obliging offenders to comply with the law or discontinue business.

INCREASED REVENUE FROM LICENSES.

Two thousand, six hundred sixty-nine licenses to operate the Babcock test were issued the first year ending June 1, 1912. As a source of revenue this measure brought to the State Treasury \$6,682.50. The amount will undoubtedly reach \$7,000.00 this year. The increased revenue of \$744,00 from milk licenses (the law having been changed so as to apply to all municipal corporations instead of to cities of 10,000 or more people) should be added to the above, making a net increase of \$7,426.50. This would pay the salary and expenses of three extra men.

The addition of two Assistant Dairy Commissioners in the Department by the Thirty-Fourth General Assembly has enabled us to care for the work in a much more satisfactory manner than ever before. The appointment of inspectors for the purpose of doing both dairy and food work was something of a departure from former custom, and the results have been most satisfactory.

EDUCATIONAL WORK.

The records show that speakers from this Department have addressed over three hundred meetings within the last year. We have assisted the Iowa State Dairy Association by furnishing men as speakers on Dairy Trains. Many of the addresses have been before Farmer's Institutes, Dairy Pienies, Pure Food Shows, Women's Clubs, etc.

INCREASE IN NUMBER OF CREAMERIES.

We have assisted in the organization of a number of new creameries as well as to help those that have needed assistance of various kinds. Our last report shows that Iowa had 494 creameries. This report shows an increase of 18 or a total of 512. We think this a very creditable showing. No branch of Iowa's manufacturing industries has more to do with the general prosperity of our people than this.

IOWA AS A BUTTER STATE.

We have tried to present for consideration of the Iowa Dairymen a few concrete facts like the following:

Iowa produces annually 100,000,000 pounds of creamery butter, which at 30 cents per pound is worth \$30,000,000.00.

The average Iowa cow produces 140 pounds of butter fat annually. An increase of fifty pounds per cow would mean an additional income to Iowa of \$18,750,000. An increase of 100 pounds per cow would mean a net increase of \$37,500,000.

The best Iowa county produces 7,542 pounds of creamery butter per square mile. If the entire state produced an equal amount on each square mile, Iowa would yield annually 418,558,875 pounds of butter worth \$125,567,622.50 or more than four times its present output.

Herein lies Iowa's opportunity.

Is it not worth while?

We have tried to show that by the use of the scales and Babcock test and the weeding out process with a little better care and feed they could easily increase the production of their herd fifty pounds per cow per year. That by the use of a pure bred dairy sire they could breed up their herds and make a still further increase of fifty pounds per cow, making a net increased income of \$37,500,000.00. It is in the last three or four years only that any considerable number of dairy sires have been shipped into the State. It is easy to understand that it takes several years before an increase in our production will be shown as most of the heifers, the result of the first cross would not be bred to freshen before they

are about three years of age. We maintain that a herd bred up by the use of a pure bred dairy sire is for all practical purposes, so far as the production of dairy products is concerned, as good as a pure bred herd, especially after four or five crosses. We always advise the use of a pure bred sire and never discourage the buying of some pure bred females if the dairyman has a few hundred dollars left after buying the sire.

SAVE THE CALVES.

We think the tendency among the dairymen to rush the calves to market as soon as they are dropped deplorable. We are greatly limiting the supply of dairy cows by this course. There is already a shortage of she stuff and the only remedy we know of is that of saving the larger share of the best heifer calves. Prices for good dairy cows were never higher nor the demand better than at this time, and if we wish to come anywhere near keeping up the supply for the future the heifers at least must be spared. If some change does not come at once and more calves can be raised the price of cows will be prohibitive, and as a result our supply of dairy products will be materially reduced.

NEW BUILDING A NECESSITY.

New quarters for this Department should be provided. Within the last two or three years the work of this Department has more than doubled. The help has, and will have to be increased as extra work is added. Permit me to call attention to the following, which is a fair indication of the growth of the department: The receipts turned over to the State Treasurer for 1909 were \$9,593.24; for 1910, \$17,435.32; for 1911, \$20,892.97; for the first nine months of 1912, January 1st to October 1st, \$18,422.88. Besides the above, all the fines under the Pure Food Law are turned into the school fund in the different counties where prosecutions are made.

The quarters now occupied by this Department were never suitable to the work, and at this time are too congested to permit the best service. There are so many other departments in the Capitol that are overcrowded that we sincerely hope that the Thirty-Fifth General Assembly will see the necessity of the erection of a new building with the least possible delay.

NEW MEASURES RECOMMENDED.

The enforcement of the Weight and Measure Law was added to the duties of this Department late in the last session of the General Assembly. This has given us at least 25 per cent more work than we formerly had to look after. No additional help or increase in appropriation was given on this account. The enactment of an entirely new weight and measure law, a cold storage law, and a sanitary measure similar to the one passed by the Senate at the last session are recommended as absolutely necessary. A net weight law would be most helpful in correcting some of the evils now existing.

If the members of the Senate and House could be impressed with the fact that there is such a general demand for these laws as we know exists, they would not question the advisability of their enactment without delay.

SILOS.

Twenty-five years ago the silo was almost an unheard of thing in Iowa. The rapid increase in the price of land has brought about a condition which makes the farmer of today study economic problems in connection with his business the same as any other manufacturer. Leakages or wastes must be guarded against if the farmer is to make a profit on his high-priced land.

The dairy cow is the most economical producer of human food on the farm if fed and cared for in an intelligent manner. The milk of a cow that produces 10,000 pounds yearly contains 8,710 pounds of water, 290 pounds of fat, 485 pounds of sugar, 340 pounds of protein and 75 pounds of ash. Therefore, it is evident that the cow must consume large quantities of succulent feed to produce economically. The grass in summer provides her with this succulent feed but if the farmer is without a silo his cows are de-

prived of succulent feed for winter use. No man keeping six or more cows can afford to be without a silo regardless of the first cost.

Today the silo is no longer an experiment and practically all the leading dairymen of the country are using them. Some seven or eight thousand new silos have been built in Iowa alone during the past year which is sufficient evidence that they are a success. We are not suffering today in the rural districts for the want of finding new things so much as we are for the simple application of the things we already know. Practically every farmer admits that the silo is a good thing but he puts off till tomorrow what he should do today and the waste of crop continues from year to year. In the corn belt where stalks are allowed to stand in the field, 40 per cent of the crop is wasted. It has been estimated that an aere of corn put up in the silo has a value of \$27.00 while the same standing in the field and husked has a value of \$27.00.

Thus it can be seen that the silo nearly doubles the value of the corn crop.

In feeding silage with alfalfa or clover hay, we have practically a balanced ration all raised on the farm. Experiments have been conducted at the Kansas and other stations which show that the grain ration can be cut down one-half the usual amount where alfalfa or clover hay and ensilage are fed. Ensilage always plays a prominent part in the economical ration of most farm animals and may the day be not far distant when the silo will be as common a sight on the Iowa farm as the corn-crib is today.

CITY MILK INSPECTION.

While there is yet much room for improvement, we do feel that the cities of Iowa today are receiving better milk than at any previous time. (We quote a recent editorial in the Breeders' Gazette of Chicago) "The city milk consumer wants clean milk and should have it. There is a marked and very healthy demand for better milk by the Board of Health in practically all cities and many of them are considering the enactment of regulations and restrictions for the producer of milk. Sometimes these are not wise, sometimes they remember that to conform to their rules requires an

increased outlay and a higher production cost but most times they do not. When the city is ready to pay for clean, first class milk, it will be forthcoming, but the cheap milk and the clean, rich milk which most cities demand, is an impossible combination. It is not fair to the dairyman to ask that they furnish a superior product at an inferior price. The real solution for less bacteria is more cents per quart."

We feel that by the use of the government score card, we are enabled to efficiently improve the sanitary condition of the dairies and instruct the dairymen in the better care of their product. We surmise that the marked agitation for pure milk in Chicago is causing the cities of Iowa to wake up to the importance of the supervision of the milk supply, but we should remember that the conditions in the smaller cities are not what they are found to be in cities the size of Chicago, in this: that in the average Iowa city the milk is consumed before it is 24 hours old and probably 50 per cent of it within 12 hours from the time it is milked; whereas, in these larger cities where the milk is shipped in from long distances, the milk is usually 24 hours and often 48 hours or more old before it reaches the consumer.

There are two cardinal points that control the wholesomeness of milk, one is its age and the other the temperature at which it is kept and while the latter condition is overcome in a measure by the use of refrigeration cars, the age of the milk in these larger cities is always much increased before consumption and while our problems are similar, it is much simplified. In these towns and small cities, the bulk of the milk is produced within a short hauling distance and much of it even within the corporation.

The market milk question would be greatly simplified if, as Dr. Jacobi, in his President's address before the last meeting of the A. M. A., states that practically all mothers could nurse their own infants if they would and the use of artificial feed for infants could thus be eliminated. His remark that an action for homicide should be instigated in every case of death of a baby from want of its own mother's milk against the doctor, the nurse or the mother, seems harsh, but it is doubtless true.

We recognize the fact that in a large sense the question of clean milk is a public health question but we must also remember that it has an economic side and that the most efficient way to induce the dairyman to produce a sanitary milk is to increase their profits by furnishing for them a market whereby it may replace the inferior sort. Sanitary milk cannot be produced with the average Iowa cow, delivered and sold on the market today for less than 8 1-3 cents per quart. From personal observation I should estimate that 85 per cent of our market milk is sold for a little over 7 cents per quart (14 quarts for \$1.00) or less. Possibly 14 per cent at 8 1-3 cents per quart (or 12 quarts for \$1.00) and only a fraction of 1 per cent above this price. Market milk has not increased in price proportionate to other dairy products in recent years.

The salutary effect of milk inspection is well illustrated by reference to the experience of the city of Rochester, N Y. During the five years from 1887 to 1892 the infant mortality of that city ranged from 740 to 900 per year. In 1892 efficient milk inspection was inaugurated and the infant mortality rapidly dropped until during the years from 1897 to 1904 it ranged between 400 and 460 per year.

We have been using quite extensively the government score card and we find that the average score of dairy farms in Iowa is less than 45 per cent out of a possible 100 per cent. This, of course, is quite low but not so low as that of the dairies supplying milk to Chicago which is nearly five points less and the dairies supplying the city of Washington score an average of only 43 points. While the use of the score card system is of recent date, all familiar with its use agree that by the proper use of this system, the dairies so scored do improve often quite materially from one to a subsequent visit of the inspector. By its use each particular item is gone over in detail and record made of conditions found and while some might be inclined to give undue importance to some one thing, this method gives to each item its proper and due weight and no more. In the city of Des Moines all the dairies supplying milk to the city were scored for the first time some two years ago and we have just recently finished scoring them again and find that the average increase of the score of these dairies has been in this time 13 points (or from 46 to 59).

The problems in market milk vary with the season. For instance; in the winter time when cows are housed, the sanitary conditions of the barn, (including the kind of floor, ventilation, provisions for light) have a marked influence on the quality of the milk, whereas; in the summer, this factor does not enter largely into the question for the reason that the cows are stabled only at milking

time. But in the summer, we have the fly to deal with. This is a very unwelcome companion to the cow and only recently have the people been awakened to the fact that the fly is the one great menace to the public health. We find as much or more visible dirt or sediment in milk during the summer time than during the winter season but this summer sediment is not so deleterious to the milk as that of winter. The sediment in summer is usually caused by the cow wading or standing in water and fighting flies and throwing the muddy water on her udder and belly. This dries and at the time of milking falls into the pail in the form of black dirt or sand, whereas, the sediment found in winter's milk is usually dried manure.

The proper food for the infant mammal be it man, horse, cow, dog or sheep or porpoise is the milk of its own mother, but with the human infant, the best and most available substitute for its mother's milk is the milk of the cow. The ideal milk is that produced from perfectly healthy cows and handled in a strictly sanitary manner, milked clean, cooled immediately after milking and consumed at the earliest possible moment thereafter.

There is a tendency to demand that market milk shall be pasteurized. The attitude of this department on the question of pasteurization stated briefly is this: In the absence of a strictly first class raw milk, pasteurization is advisable and when we speak of pasteurization we mean efficient pasteurization. Efficient pasteurization is that process whereby all pathogenic germs in the milk are rendered inert and harmless by heating the milk to the lowest possible point. This can be accomplished by heating the milk to a temperature of 145 degrees F. for 25 to 30 minutes. Commercial pasteurization is usually not efficient pasteurization but is used simply for the purpose of killing the lactic acid bacteria and thus preventing the souring of milk. A milk that in its raw state could not be sold and delivered to the customer from the fact that it would become sour in a few hours can be pasteurized and remains sweet for a period of 24 to 48 hours. Pasteurization, however, does not make dirty milk clean milk. That the mother may be sure that the milk is properly pasteurized, we recommend the home pasteurization of milk. This is not a laborious task nor does it require great technical skill or extensive apparatus to pasteurize the amount of milk used by the baby. We feel that we should insist upon this process being used particularly during the hot months of summer. It can be accomplished thus:

See that the milk is sweet and clean when delivered to you. Place the bottle in a pail or similar receptacle, holding at least as large a volume of water as you have of milk. Place under the bottle a perforated can cover or some similar device to keep the bottom of the bottle from immediate contact from the bottom of this pail. Place this pail, filled with water up to near the level of the milk in the bottle, over the flame, and when the water has boiled, but not the milk, remove immediately from the stove and allow the milk bottle to stand in this water for twenty-five minutes. Then remove and cool as quickly as possible to 50 degrees F. or less. The milk bottle should be placed in a clean refrigerator in the compartment with the ice and not with the other articles of food in the refrigerator.

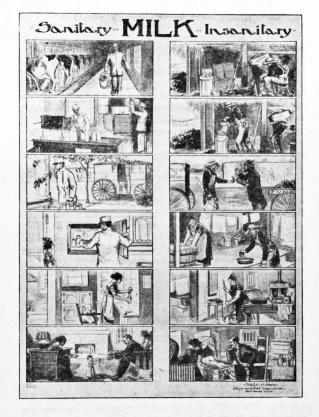
The consumer is apt to think there is nothing he can do. Observation teaches that when the patrons of the milk man are in the habit of visiting his dairy farm and looking over the conditions there he is apt to be more particular to keep things looking clean than he otherwise would. If you are a patron of his, it is certainly your privilege to do this and particularly if you have children in your family it is a duty you owe to yourself and them. If the dairy is clean, they will welcome such inspection and if it is dirty, they are apt to clean up. Ask your milkman for explicit instructions for finding his farm or the farm where the milk is produced. If he is expecting you, it often has the same effect as though you actually should go out.

Market milk should be delivered in bottles. You should have a place where the milkman may leave it out of the way of cats and dogs and in a cool, shady place. These bottles should be taken into the house as soon as delivered, put under the cold water faucet, and washed off on the outside. Then loosen the cap and place the bottle in the refrigerator or on the ice, inverting over the mouth of the bottle a common teacup. We score the dairyman for uncleanliness, and bad smelling surroundings, but it is a fact that most family refrigerators would be benefitted by more frequent cleaning and airing. The medical milk commission of the city of New York visited 4,300 homes in that city and found milk improperly cared for in 4,100 of these homes.

Table showing the number of milk licenses issued to city milk dealers for each year from 1905 to 1912. In each case the year ends on July Fourth.

	1905	1906	1907	1908	1909	1910	1911	1912
Number	827	803	1006	1078	1149	1106	1310	1908

Cities	Population	Inspectors
Boone	10,347	M. Healy, M. D.
Burlington	25,741	W. F. Schroeder
Cedar Rapids	32.811	Phil Pray
Clinton	25,577	
Council Bluffs	29,292	Peter Smith
Davenport	43,028	H. J. High
Des Moines	86,368	J. Howard Sasseen
Dubuque	38,494	F. J. Kennedy, D. V. S
Fort Dodge	15,543	D. C. Benjamin
Keokuk	14,008	W. P. Sherlock, M. D.
Iowa City	10,091	C. S. Chase, M. D.
Marshalltown	14,000	J. A. Turner
Mason City	11,230	A. L. Wheeler, M. D.
Muscatine	16,178	John Tillie, D. V. S.
Ottumwa	22,012	B. W. Van Der Veer
Sioux City	47,848	E. C. Pape
Waterloo	26,693	W. W. Wyant



IOWA STATE DAIRY ASSOCIATION.

The Iowa State Dairy Association, first with Hugh G. Van Pelt as Expert, and since June 1st under the direction of E. S. Estel as Expert, has worked throughout the entire state during the past year. It has been the main object of the Association to reach as many farmers and dairymen as possible and give a general insight into the dairy conditions as they now exist in the state, and to advocate practical methods for future improvement.

The most important activities during the past year have been the Dairy Trains operating over the Illinois Central System and the Rock Island System north of the main line. Large and interested crowds met the trains at every stop and listened attentively to the talks and practical demonstrations given by the experts. Seventy-six towns were visited on the Illinois Central and one hundred and nine on the Rock Island, the speakers reaching 130,000 interested Iowa farmers.

Aside from the Dairy Trains, speakers were furnished for thirty-eight Farmers Institutes during the winter. The creameries have been holding meetings and picnics all summer to encourage their patrons to first raise a more profitable type of dairy animal and then produce a better grade of cream for the factory and in view of these pressing needs thirty-two such meetings have been attended by speakers from the Association. Considering all of the meetings held, the speakers representing the Iowa State Dairy Association have attended two hundred and fifty-five meetings and talked directly to over 150,000 farmers of the state.

ICE-CREAM.

Not long ago almost the entire dairy output of Iowa was made into butter and cheese. The dairy industry in this state has been growing rapidly and with its growth has come an equal increase in the manufacture of ice-cream. Today the ice-cream industry in the United States is worth considerably more than \$100,000,000 annually. The profits to be derived in using cream for ice-cream when compared with butter making are almost double, thus it is an incentive for the small creamery man to use a part of his cream supply for ice-cream purposes.

During the past year the increase in the number of factories in this state has been great and the ice-cream expert in this Department has been busy regulating the output and giving assistance to all factories that have so desired. The coming year the Department expects to enforce the law regarding the standard of fat in ice-cream and will continue to lend all assistance possible to the ice-cream makers throughout the state.

A simple method for standardizing and one that can be applied by any maker is the "Square Method." It can be applied to any problem which may come up. For example, the cream you wish to standardize tests 39 per cent and the milk on hand 3.7 per cent, how much cream and how much milk will it be necessary to mix in order to get 20 per cent cream?

In the center of the square place the per cent to which it is desired to standardize, at the upper left hand corner place the figure representing the richness of the cream used, and at the lower left hand corner place the per cent of fat in the milk. In order to get the amount of each to use in standardizing, all that is necessary to do in order to get the proportions is to simply subtract the 20 from the 39 giving 19, or the parts of milk necessary to use, and from 20 subtract 3.7 leaving 16.3, the number of parts of cream to use with 19 parts of milk. From this we see that in order to produce 20 per cent cream from 39 per cent cream and 3.7 per cent milk, it is necessary to use for every 16.3 pounds of cream, 19 pounds of milk, giving a total of 35.3 pounds of 20 per cent cream.

From this proportioning, it is possible to work any problem in standardization. If you wished 400 pounds of 20 per cent cream and had 39 per cent cream and 3.7 per cent milk to make it from, it is necessary to divide 400 by 35.3 which will give a factor with which to multiply the number of pounds of cream and milk required to make 35.3 pounds of 20 per cent cream, the sum of which will give 400 or 400 pounds of 20 per cent cream.

Another example using the same figures: Suppose you had 59.5 pounds of 39 per cent cream and wished to know how much 3.7 per cent milk would be required to reduce it to 20 per cent. This can be determined by dividing 59.5 by 16.3, the amount of cream

used for every 19 pounds of milk giving a factor which multiplied by the 19 will give the number of pounds of milk to use.

Some will ask, "How is this method used in standardizing cream with skimmed milk?" The method is just the same, the skimmed milk being figured at zero per cent.

The proportions are the same as before for every 20 parts cream 19 parts skimmed milk are required to reduce it to 20 per cent.

It sometimes may occur that creamerymen may want to know how much skimmed milk it will be necessary to remove from an amount of whole milk in order to get 20 per cent cream. The square method still holds good except the proportions are a little different. Given 3.7 per cent milk to reduce to 20 per cent cream.

16.3 pounds of skimmed milk must be removed from each 20 pounds of 3.7 per cent milk in order to get 20 per cent cream.

Along this same line, a large number of the makers called upon have asked the question, "What must the cream used in ice-cream test so that when it is made up the ice cream will come up to the required standard?" The sugar, flavoring material, and filler added to the cream adds weight to the mix—consequently, a reduction of the percentage of butter fat. Just how much the cream will be reduced depends upon the amount of ingredients added.

A rule that can be followed to determine the percentage of cream which must be used in order to conform to the standard, is as follows: Multiply the weight of the mix by the percentage of butter fat desired in the ice cream and divide this by the number of pounds of cream used in the mix. To illustrate—suppose the mix consisted of 44 pounds of cream, 8 pounds of sugar, 4 ounces of filler, and four ounces of flavor, making a total weight of 52.5 pounds for the mix. In order to be on the safe side, at least a 12.5 per cent ice-cream should be made.

 $52.5 \times .125 = 6.56 =$ pounds of butter fat which must be contained in the mix, or pounds of fat in the original cream. By dividing 6.56 by 44 we get .149 or 14.9 per cent, the test of the cream which must be used in the mix to give a 12.5 per cent ice-cream.

A large number of the makers visited bought their cream by the gallon and were paying prices equivalent to 41 to 55 cents per pound butter fat. This cream was bought on the supposition that it tested 18 to 24 per cent. In a great many instances the test fell considerably below these marks. From these observations, it seems that buying cream by the gallon unnecessarily increases the cost of manufacture since sweet cream could be had very generally over the state at prices ranging from two to ten cents above market quotations for butter to 40 cents per pound butter fat. Where butter fat was bought, 40 cents was the highest price paid.

Several makers in making up their ice-cream used these supposed tests as a basis in standardizing their cream and were surprised that their ice-cream did not test as much as they had thought. From this, we are led to believe that ice-cream makers who have been buying cream by the gallon would do well to pay by the test.

By standardizing the cream for ice-cream making the guess work can be eliminated and by paying for cream by the test the cost of manufacture should be reduced.

COW TESTING.

The yearly test of the dairy cow has increased in popularity during the past year, and we are beginning to realize that it is through the individual that we must build the foundation for more and better dairy animals. It is pleasing to report that during the past month a number of cows in different parts of the state have finished records of 600 to 650 pounds of butter fat for the year. W. W. Marsh of Waterloo, Iowa, has again continued his offering of \$1,000.00 for yearly tests to be conducted by the Iowa State College under the supervision of the Iowa Cow Culture Club. This year there are 75 cows entered in the test.

BOOST FOR BETTER QUALITY.

Each year we become more impressed with the fact that health is largely governed by the quality of the food we eat. Both milk and cream are consumed in a raw state and no articles of our diet are such harbingers of disease producing bacteria if exposed to them at a low temperature. It is very important that the producer reduce the temperature of the milk as soon as it is drawn or after separation, to a temperature of 50 degrees or lower, and keep it in a sanitary place. When it is passed on to the wholesaler or retailer it must be kept under the same conditions and the consumer must not disregard these same precautions up to the time the milk or cream is placed on the table.

It is a very deplorable fact that large quantities of the cream produced in this state have become greatly deteriorated in quality and in some cases almost decomposed, before it reaches the creamery. Such cream cannot be made into first grade butter and sooner or later the producer has to suffer for his negligence in the care of his cream. In view of this fact, the Dairy and Food Department have issued 50,000 copies of a bulletin called, "Care of Cream on the Farm" and also 15,000 copies of another bulletin called "Care of Milk and Cream in the Home," either of which may be obtained upon request.

"The Dairy and Food Commission of the State of Iowa will use every means to bring about the grading of cream and paying therefor according to quality or grade. The best interests of dairying in this State demand that this system be adopted, and the following grades are hereby established:

"Special Grade Cream is hand separator cream showing not more than .15 per cent acidity, free from bad odors, not over two days old in warm weather and not more than three days old in cold weather and testing 25 per cent or above.

"First Grade Cream is hand separator cream reasonably sweet, free from bad odors, not over three days old in warm weather and not over four days old in cold weather, and testing 25 per cent or above.

"Second Grade Cream is cream not reasonably sweet, over three days old in warm weather and over four days old in cold weather, is not of good flavor, hand skimmed and water separated, and testing less than 25 per cent butter fat."

WHY TESTS VARY.

Many things, both separately and collectively, tend to cause variations in milk and cream testing. Those who are not familiar

with the Babcock test look upon it with a certain degree of awe, see in it some mysterious contrivance to baffle the producer, while in reality it is a much simpler machine and more easily understood and operated than half the machines used on the modern farms today. Any person of ordinary intelligence can learn to operate the Babcock test in a comparatively short time. It is more a test of care and accuracy than it is any great understanding of chemical action. It is quite easy for a dishonest man to manipulate the test in different ways, and so much of this has been done in recent years that different states have passed very drastic laws to punish the offender as well as protect the farmer and the honest operator. Today the chances for dishonesty have been reduced to the minimum by the passage of the aforementioned laws and by the installation of many testers on the dairy farms.

The variations to be found in testing milk are due to several causes. The fat content of milk varies much more than any other solid found in it. When any appreciable difference occurs in the fat content of the milk of one or more cows, usually some definite reason can be supplied, but once in a while a variation will occur when there seems to be no valid explanation for it. The addition of a fresh cow's milk will often increase or perhaps reduce the average fat content of the whole herd. The different breeds of cows govern the fat content largely, there being quite a decided difference between the Holsteins and Jerseys in that respect. The period of lactation also affects the fat content. For the first couple of months after calving, the fat content of the milk is a little higher than the following two months, due to the fact that the cow is apt to take a quantity of the accumulated fat from her back and place it in the milk. In about two months the cow is usually in a normal condition again and for the following two or three months the fat content is apt to decrease. From this time on to the end of the lactation period the amount of milk will usually decrease and the fat content will slightly increase. The injection of a cow into the herd at any time during her lactation period will usually cause a slight change in the fat content of the milk of the whole herd. These are some of the reasons that form the bone of contention between the producer on the one hand and the city milkman and the creameryman on the other.

In cream testing we have about the same variations to contend with and then several more. It is next to impossible to run a

separator and keep the test the same at all times. The milk may be a little warmer one day than another; the rate of inflow may be a little greater one day than another, perhaps the machine may be turned a little faster or a little slower than usual or perhaps more or less water used to flush out the bowl; all have their effects upon the per cent of butter fat.

Generally speaking, the cream screw should be turned in a little in the spring as the cows are usually fresh at this season of the year and are eating large quantities of succulent feeds high in per cent of water, which has a tendency to reduce the fat content and if the cream screw is left the same as for winter use, the percentage of butter fat will fall off. We cannot feed fat into milk, but as a general rule the healthy condition of the fresh cow and the stimulus she receives from being put on green grass in the spring, causes her to give a larger quantity of milk, somewhat less in percentage of fat than she does in the fall toward the end of the lactation period.

It is far better to send a fairly heavy cream to the creamery, that is, a cream with a fat content of from 30 to 40 per cent. If a much heavier cream is separated there is a loss incurred in handling when pouring from one vessel to another. If a very thin cream is separated the farmer is sending a quantity of skim milk to the creamery that could be well utilized at home and for which he is receiving no remuneration. Also if this thin cream becomes very sour before a test can be made, the large per cent of the milk contained therein will curdle and prohibit the possibility of obtaining a representative sample and an accurate test.

CREAMERY BUTTER.

The amount of creamery butter manufactured within the state as reported by the 494 creameries for the year ending June 30, 1912, shows some decrease as compared with the year previous. According to the best reports obtainable, the creameries of Iowa manufactured 91,738,573 pounds of butter which is a decrease of 4,957,011 pounds. The decrease in the butter output does not furnish evidence that dairying is on the decline in this state but merely reveals that the milk and cream produced on the farms is being marketed through other channels. The creameries of

Iowa report having manufactured more than double the amount of ice cream that was manufactured the previous year, the total amount being given as 519.890 gallons. We are unable to secure accurate figures showing amount of butter fat annually used for ice cream purposes but a conservative estimate places this amount at 2,520,000 pounds. The steady growth of the ice cream trade has had a tendency to reduce the amount of butter manufactured and this reduction will continue to exist until changing industrial conditions cause the farmers to again resort to the production of milk and cream as the best means of converting their crops into a commodity that will bring them the most money. It is a notable fact that the production of butter has increased during those years when the price of farm crops has been lowest and to a certain extent the reverse has been true when crops were good and high prices ruled. The production of milk and cream necessarily demands close application and painstaking work on the part of the farmers and a period of prosperity makes it possible for many farmers to realize a good income without giving their attention to the production of milk. It has been said that the average man is as lazy as he dares to be and this statement comes very nearly being illustrated in connection with the production of butter fat by the average farmer. On many farms, dairying has been conducted as a side line and when high prices rule and the farmers generally are very prosperous, they feel in many cases that they are justified in discontinuing their milking operations on account of the exacting nature of the work. When a period of financial depression affects the general prosperity of the farmers, we believe large numbers of our farmers will again look to dairving as the most profitable branch of their farming operations. When this occurs we can reasonably expect a large increase in the production of creamery butter and the improved cattle and better methods which have been introduced during the past few years will make the production of butter fat more profitable than it has been at any time in the past and will lend encouragement to many to adopt the production of butter fat as their special branch of agriculture.

RENOVATED BUTTER.

Since the price of butter has been extremely high, considerable quantities of process butter, otherwise known as renovated butter.

have been sold within this state. We believe some rigid legislation should be enacted regulating the sale of this product. Numerous cases have been called to our attention where persons representing themselves to be farmers have procured this butter in large quantities and after repacking it in jars or other containers offered the same as country butter and many persons have purchased this product through such misrepresentations who could not be induced to use it were its true character known. We believe this product should be sold under some such labeling requirements as are provided for the sale of oleomargarine and severe penalties should be attached for the sale of renovated butter as country butter or in any other manner than that prescribed by the statute.

OLEOMARGARINE.

We have been unable to obtain accurate figures showing the sales of oleomargarine in the state of Iowa but we find that the number of dealers in this product has increased from 1,623 in 1910 to 2,182 for the year ending June 30, 1912. It is reasonable to suppose that the consumption of oleomargarine has increased at practically the same rate as have the sales of lieenses to dealers. This department made but one successful prosecution during the past twelve months for violation of the oleomargarine law and this was for the sale of a product having yellow color in imitation of butter. The present oleomargarine law appears to be very satisfactory and dealers generally show a disposition to comply with the law.

CHEESE.

This department has received annual reports from seven cheese factories and the output of cheese is given as 346,456 pounds for the entire state. This shows an increase of 122,032 pounds over last year but this is only a small percentage of the amount consumed in this state. While the production of cheese in Iowa may never prove to be of great importance, we think the state should supply the home demand for cheese and we have reason to hope that this industry will receive enough attention from persons interested in the manufacture of cheese to enable them to at least meet the requirements of our own population.

GENERAL REVIEW OF THE BUTTER MARKET.

The market quotations for the best grades of table butter have shown a higher average during the past year than at any time since 1882, the average for the twelve months ending October 1, 1912, being 31.21 cents per pound for extra creamery. The average for the previous year was 26.09 cents but the comparison is hardly on an equal basis as the latter figure is based on the second grade quoted on the New York market while the first figure given is on this basis until May 13th when the specials class was abolished and the highest quotation was changed to extra grade. The difference between these two grades has been on the average about one-half cent per pound, hence the average for the year would be about 31 cents per pound based on the grade of extras. The high price realized for the best grades of creamery butter is not surprising when we take into account the limited supply of fine butter and the price quoted for the best grade is really not high by comparison with quotations of former years when we consider the percentage of increase in the prices of other food products and the like increase in value of feeds that are consumed by dairy animals. Herewith we give a table showing the average price of butter by months covering a period of twelve vears.

SHOWING AVERAGE MONTHLY PRICE OF EXTRA CREAMERY BUTTER IN NEW YORK MARKET.

Month	Twelve months	Twelve months	Tweive months	Twelve months	Twelve months	Twelve months	Twelve months	Twelve months	Twelve months	Twelve months	Twelve months	Twelve months
	ending Oct. 1,	ending Oct. 1,	ending Oct. 1,	ending Oct. 1,	ending Oct. 1,	ending Oct. 1,	ending Oct. 1,	ending Oct. 1,	ending Oct. 1,	ending Oct. 1,	ending Oct. 1,	ending Oct. 1,
	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912
October November December January February March April	\$.2190 .2487 .2540 .2262 .2250 .2212 .2099 .1900	\$.2200 .2412 .2510 .2425 .2862 .2810 .2825 .2275	\$.2362 .2650 .2920 .2762 .2600 .2860 .2725 .2200	.2317 .2423 .2270 .2517 .2452 .2284	\$.2095 .2481 .2688 .2910 .3218 .2807 .3008 .2371					\$.3064 .3095 .3490 .3344 .2964 .3263 .3113 .2843	\$.2996 .3117 .2960 .2639 .2611 .2391 .2111 .2187	\$.3044 .3391 .3679 .3810 .3114 .3064 .3235 .3043
fune fuly August feptember Av. value per lb	.1925	.2195	.2160	.1803	.2049	.2022	.2360	.2329	.2581	.2792	.2499	.2731
	.1960	.2131	.2012	.1767	.2056	.2062	.2481	.2243	.2623	.2831	.2510	.2713
	.2050	.1990	.1940	.1793	.2111	.2257	.2488	.2285	.2719	.2938	.2631	.2663
	.2110	.2170	.2075	.1947	.2068	.2462	.2781	.2388	.3013	.2989	.2655	.2976

TABLE NO. II.

TABLE SHOWING NUMBER OF POUNDS OF MILK RECEIVED, NUMBER OF POUNDS OF CREAM RECEIVED, POUNDS OF BUTTER MADE AND POUNDS SOLD IN 10WA AND OUTSIDE THE STATE SO FAR AS REPORTED BY THE CREAMERIES.

Counties	Number reporting	Pounds of milk received	Pounds of cream received	Pounds of butter manufactured	Pounds sold to patrons	Pounds sold in Iowa	Pounds sold outside the state
AdairAdams	3 1 8	45,226	1,652,461 270,700 7,047,519	577,139 97,567 1,793,983	25,338 1,772 34,823	26,056 11,342 119,992	525,745 84,453 1,639,168
Allamakee Appanoose	0		7,017,010	1,100,000			
Audubon	8		2,792,783	1,120,808	58,550	22,839	1,039,419
Benton	8 15 3 25 10 4 14	12,000 28,848,602 565,144 74,327,265 18,648,067	1,470,494 4,647,374 613,952 554,965 2,175,355 2,271,820 4,722,522	606,673 2,713,176 250,771 3,303,278 1,463,321 749,653 1,518,800	6,097 168,828 10,919 334,508 117,178 12,725 108,046	106,347 664,453 93,785 168,444 189,676 45,730 69,794	494,229 1,879,895 146,067 2,890,326 1,156,467 691,198 1,340,960
Calhoun Carroll Cass Cedar Gordo Cherokee Chickasaw	5 6 2 6 7 2 11	238,200 192,745 1,110,265 21,575,814	1,588,783 1,714,929 1,272,443 652,797 4,050,923 669,306 5,183,217	973,426 620,627 433,899 219,603 1,342,297 166,260 2,315,546	19,563 20,602 2,284 13,676 26,804 913 165,344	11,737 69,886 65,155 117,674 217,304 65,973 94,846	942,126 530,139 306,460 88,253 1,098,189 99,374 2,055,356
ClarkeClayClaytonClintonCrawford	15 5 1	954,257 12,912,023 276,036	2,308,856 6,739,274 1,897,624 397,903	853,517 2,586,883 1,167,974 150,268	56,130 94,262 20,468	38,787 87,738 187,426 7,268	758,600 2,404,883 960,080 143,000
Dallas Davis Decatur Delaware Des Moines Dickinson Dubuque	2 1 1 16 1 4 18	27,640	1,227,264 12,858 1,039,308 31,568,878 28,600 1,189,322 9,520,633	398,264 4,286 421,631 2,990,056 8,590 406,120 3,323,473	148,246 	136,140 65 11,812 229,073 5,275 20,257 448,971	113,878 4,221 409,819 2,573,929 3,000 367,109 2,795,711
-	5		1,556,497	565,565	37,408	24,872	503,285
FayetteFloydFranklinFremont	21 5 7	45,049,853 8,771,890 456,144	5,675,440 1,667,413 3,658,533 88,291	3,870,714 768,142 1,123,321 39,776	268,328 23,333 56,732 95	257,454 190,832 16,479 3,455	3,344,937 553,977 1,050,110 36,226
GreeneGrundy	1 7	61,398 1,385,364 52,478	281,295 2,537,887 2,080,416	112,485 832,844 712,988	2,688 44,564 38,217	17,995 14,518 35,698	91,809 773,769 639,073
Hamilton Hancock Hardin Harrison	8	856,942	1,211,501 4,421,539 4,072,517 543,104	445,152 1,399,777 1,355,573 178,276	35,006 45,237 72,045 450	15,519 30,058 66,587 35,000	394,627 1,324,486 1,216,941 142,826
Henry Howard Humboldt	-		4,472,041 3,025,682	1,590,951 981,448	34,539 31,376	23,458 14,292	1,532,950 935,780
Ida		8 313,566	239,101 2,022,017	90,267 659,764	50,276	38,007	90,26° 571,48
Jackson Jasper Jefferson		1 1,186,475 2 665,867	4,969,019 449,367 327,000	1,630,228 167,968 109,000	13,646	74,272 26,249 59,750	1,510,325 128,075 49,00

TABLE No. II.—CONTINUED

Counties	Number reporting	d milk	r cream	ounds of butter manufactured	old to	Pounds sold in Iowa	Pounds sold outside the state
	Number	Pounds of milk received	Pounds of c	Pounds of butter manufactured	Pounds sold patrons	Pounds s	Pounds s
Johnson Jones	8	2,002,726	5,760,976	1,777,536	84,384	70,198	1,622,95
Keokuk Kossuth	2 18	2,065,999	810,000 5,320,949	210,000 1,877,732	144,600	60,000 73,375	150,00 1,659,75
Lee	1		2,320,089	743,363		175,000	568,36
Linn	9	3,049,274	6,603,808	2,105,959	61,292	531,411	1,513,25
Louisa	1		74,250	23,357	600	8,000	14,75
Lucas							
Lyon	3		2,123,804	732,416	1,320	13,609	717,48
Madison							
Mahaska	1	126,877	980,548	293,510 113,477		10.000	293,51
Marion Marshall	4	120,877	321,644 2,274,151	684,950	21,690	18,057 181,611	95,42 481,64
Mills	1		199,650	72.596	479	25,657	46,46
Mitchell.	7	1,081,100	4,161,618	1,259,016 65,394	105,119	309,340	844.55
Monona	1		4,161,618 136,108	65,394	612	416	64,36
Monroe	1		328,000	100,000	400	60,000	39,60
Montgomery Muscatine	2	2,920,830	1,300,000	300,000		75,000	225,00
					~ ~~		
O'Brien Osceola	5	81,025	2,135,907 1,481,129	756,317 520,152	27,384 13,185	71,640 17,650	657,29 489,31
Page	1		1,446,909	400 200			
PagePalo Alto	13	6,430,797	4 182 959	1.457.909	130,504	74,556	1,295,25
Plymouth	4	167,505	4,182,959 1,090,568	369.336	8.643	82,448	278,24
Pocahontas	4		946.357	347,317	8,643 15,308	8,185	323,82
Polk	3	1,102,400	10,909,817 2,920,539	3,743,092		1,126,240	2,616,85
Pottawattamie Poweshiek	7	1,102,400 365,000 94,720	2,920,539 1,237,867	1,4/7,909 369,336 347,317 3,743,092 988,113 385,276	6,722	72,152 82,448 8,185 1,126,240 100,000 107,268	888.11 271,28
Ringgold					-,,	20.,200	
0	5	41,085	1 000 000	588,157	18,851	00 107	F/7 10
SacScott	2	25,000	1,673,225 1,328,716	332,031	400	22,185 24,067	547,12 307,56
Shelby	6	20,000	1,194,607	424,974	17,152	21.697	386.12
Sioux	8	216,913	1,194,607 4,673,738	424,974 1,578,133 832,763	23,861	38,313 94,353	1,515,95 642,32
Story	8	2,235,855	2,544,863	832,763	96,087	94,353	642,32
Tama	3		1,133,149	109,685	11,559		98,12
Taylor	1		2,487,240	829,080	13,210	32,400	783,47
Union	2		531,483	553,098	1,298	106,844	444,95
Van Buren							
Wapello	1		1,862,121	620,707		119,057	501,05
Warren							
Washington	1	900,000				40.610	One
Wayne Webster	3		2,031,142 1,506,370	721,088 523,981	5,354 5,296	40,319 101,210	675,41 417,47
Winnebago	8	11,803,977	3,589,062	1.609.037	116,140	75,844	1.417.05
Winneshiek	11		7,120,640	2,042,644	23.217	48, 125	1,971,30
Woodbury	4	176,800	25,148,526	9.774.239	8,550 126,654	713,451	9,052,23
Worth	9	498,201	4,323,624	1,316,615	126,654	713,451 24,286 48,059	1,165,67
Wright	6		6,339,299	1,131,092	21,494		1,060,93
Total	504	207 714 192	269,076,975	91,738,573	3,643,171	9,051,558	79,043,84

TABLE NO. III.

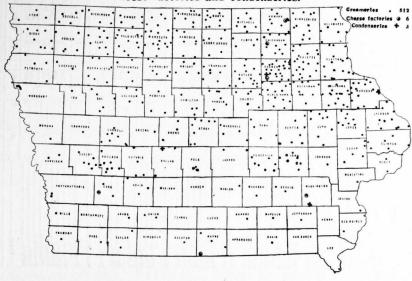
TABLE SHOWING NUMBER OF HAND SEPARATORS, NUMBER OF PATRONS AND NUMBER OF COWS.

	on .			suc		
Counties	No. of creameries reporting hand separators	Receive cream by	Hand separators reported	No.1of creameries reporting patrons and cows	No. of patrons reported	No. of cows reported
AdairAdamsAllamakee	3 1 8		771 203 1,359	3 1 8	728 214 1,723	6,074 1,498 13,479
AppanooseAudubon	8		1,199	8	1,204	9,232
Benton	7 14 3 6 10 4 14	3 	800 2,605 314 388 996 1,207 1,653	7 14 4 24 10 4 13	852 4,384 366 912 1,431 1,212 1,806	6,042 32,917 2,398 18,002 8,922 8,499 12,036
Calhoun	5 6 2 5 6 2 9	3 1 1	1,545 943 583 457 1,323 410 1,112	5 6 2 5 6 2 11	1,545 943 583 490 1,474 420 1,974	11,040 5,604 3,761 3,054 9,808 2,940 18,494
Clay Clayton Clinton Clinton Clay Clayton Clinton Clinton Clinton Clayford	9 14 5 1	1 2 1	1,013 1,861 930 214	9 15 5 1	1,087 2,430 980 214	7,677 19,642 7,110 1,284
Dallns	? 1 13 1 4 17	1 1 1 1 .1	570 156 562 1,804 50 529 3,503	2 1 15 1 4 18	590 200 562 3,002 50 533 6,998	3,600 1,200 3,372 21,924 300 3,504 56,616
Emmet	5		404	5	447	3,745
Fayette	15 5 6 1	1	1,774 785 848 382	21 5 7 1	4,837 1,007 1,091 100	35,872 6,750 8,071 425
Greene Grundy Guthrie	1 6 4	1	214 680 798	1 6 4	214 710 915	1,498 5,636 5,910
Hamilton Hancock Hardin Harrison Henry	4 8 6 1	1 1	1,355 1,209 2,484 270	4 8 6 1	700 1,215 2,518 300	3,924 $10,176$ $13,073$ $2,500$
Howard Humboldt	9		1,480 1,541	9	1,563 1,541	12,750 11,162
IdaIowa	1 8	1	100 1,109	1 8	100 749	700 4,529
Jackson Jasper Jefferson	11 2 1	1 1	1,749 250 250	11 2	1,885 303	17,390 1,750
Johnson	8	2	1,533	1 8	275	2,100
, va.	۰	Z	1,033	8	1,586	13,310

TABLE No. III.—CONTINUED

	meries hand s	am by	ators	meries patrons	800	
County	No. of creameries reporting hand separators	Receive cream	Hand Separators reported	No. of creameries reporting patrons and cows	No. of patrons reported	No. of cows reported
KeokukKossuth	2 18	1	150 1,603	2 18	250 1,684	1,750 14,48
LecLinn Louisa	1 9 1	1	$^{825}_{2,138}_{54}$	1 9 1	825 2,708 66	5,778 18,787 465
Lucas Lyon	3	1	790	3	840	5,920
Madison Mahaska Marion	<u>1</u> 1	i	326 295	1 1	326 394	2,288 1,426
Marshall Mills Mitchell	4 1 7	1	738 125 1,022	4 1 7	934 125 1,466	6,517 886 9,836
Monoua Monroe Montgomery	1		96 88	1	96 88	700 704
Muscatine	1 5	1	450 922	2 5	590 936	4,000 6.718
Osceola	5		595	5	595	6,718 4,780
PagePalo AltoPosahontas	1 13 4 4	1	643 1,108 611	1 13 4	643 1,371 625	4,501 11,183 4,407
Polk Pottawattamie Poweshiek	3 1 7	3 2 1	8,78: 30 672	4 3 1 7	9,389 36 683	2,754 65,723 252 4,276
Ringgold						
SacScott	5 2	<u>-</u>	864 477	5 2	918 477	5,376 3,409
Shelby Sioux Story	6 8 8		750 1,936 1,023	2 6 8 8	751 1,960 1,043	4,312 12,946 7,768
TamaTaylor	3	1	219 200	2	211 200	1,180
Union	2	1	759	2	759	4,713
Van Buren						
Wapello	1	1	689	1	689	4,723
Wayne	3 3 7	1	737 658 1,011	8 3 7	1,120 681 1,307	7,604 4,748
Winneshiek Woodbury Worth	11 4 9	4	$\frac{2,030}{12,940}$	11	2,324 12,940	12,234 18,965 90,370
Wright	5	ī	1,061 825	5	1,066 625	8,376 6,750
I Utal	461	58	97,041	492	113,215	834,295

Map of lowa showing location of creameries, cheese factories and condenseries.



CREAMERY LIST

*Central Churning Plant. c-Co-operative. s-Stock. i-Individual.							
Number	Name of Creamery	Located at or Near	Name of Proprietor, Secretary or Manager	P. O. Address of Proprietor, Secretary or Manager	Name of Buttermaker	P. O. Address of Buttermake	
	Adair County-						
1 2 3	Adair Co-op. Cry. Co. c Arbor Hill Cry. Co. c Greenfield Cry. Co. s Adams County—	Stuart (9 mi, s.)	Nels Hansen	Stuart	Nels Hansen	Stuart	
4	Fars. Mut. Co-op. Cry. Ass'nc Allamakee County—	Prescott	O. M. Green	Prescott	A. H. Ady	Prescott	
5 6 7	New Albin Co-op. Cry c Fars. Waukon Co-op. Cry. Co s Aretic Spring Cry. Assn c	New Albin Waukon Quandahl	A. H. Hansmeier	Wankon	F. A. Fieth	New Albin Waukon Spring Grove Minn., R. 3	
8 9 10 11	Ludlow Co-op. Cry. Co	Waukon Waterville Postville Lansing (7 mi. w.) Harpers Ferry	J. T. Bjerke J. W. Campbell C. J. Riser	Postville Waterville Postville Church	F. W. Hessel E. L. Forrester K. V. Ferris	Waukon Waterville Postville	
	Audubon County-						
12 13 14 15 16 17 18 19	Liberty Cry. Co. c	Manning Kimbaliton Hamilin Exira Eik Horn (5 mi. e.) Exira (6 mi. e.) Exira (6 mi. w.) Audubon (6 mi. w.)	Peter Lykke Jno. Slayton F. W. Klever Fred Gjerloff L. P. Nelsen Harry Nymand	Kimballton Exira, R. 5 Exira Exira, R. 2 Exira, R. 3 Brayton	M. Anderson	Kimballton Hamlin Exira Exira, R. 2	
	Benton—County						
20	Blairstown Cry Co	Blairstown	Chas Hanbold	Blairstown	Chas Hanbold	Blairstown	

Number	Name of Creamery	Located at or Near F	Name of Proprietor, Secretary or Manager	P. O. Address of Proprietor, Secretary or Manager	Name of Buttermaker	P. O. Address of Buttermaker
21 22 23 24 25	Benton County—Continued Norway Cry. Co.	Norway Belle Plaine Shellsburg Urbana Newhall Vinton	C. A. Sweet J. A. Moeller Jas. Romine Gardemann & Jungelaus	Norway	Bob A. Moeller	Belle Plaine Shellsburg Urbana Newhall
27 28 29 30 31 32 33 34 35 36 37 38 39 40	Benson Dairy Co. c Cedar Falls Cry. Co. i Farmers Dairy Assn. c Gilbertville Dairy Assn. c Co-op. Cry. Co. of Jubilee c Mt. Vernon Cry. Co. c Hudson Co-op. Cry. Assn. c Union Cry. Co. c East Lester Cry. c Fars. Cry. Co. c Great Western Cry. Co. i Crain Creek Cry. i La Porte Co-op. Cry Co. c Eagle Twp. Cry. Assn. 8 *S. P. Wadley Co. 8	Cedar Falls	Riedel & Jensen S. Sweitzer J. B. Kascht F. J. Orth Geo. H. Moeller Henry Lafrenz G. A. Evenson L. B. Duffy G. S. Kleckner E. T. Sadler Wm. Meier C. B. Gingrich P. Damgaard	Cedar Falls Waterloo Jesup Denver Hudson Winslow Fairbank Dunkerton Waterloo Denver, R. 1 La Porte City Waterloo, R. 1	A. J. Widdel	Cedar Falls Waterloo Gilbertville Jesup Cedar Falls Hudson Janesville Fairbank Dunkerton Dewar Dunkerton, R. 2 La Porte City
42 43 44 45	Dodge Fars, Mut. Co-op. Cry. Co. c	Boone Boone Story City (6 mf. w.) Berkley	L. J. Bremsen L. C. Peterson	Boone, R. 3 Story City	A. A. Anderson L. J. Bremsen L. C. Peterson	
46 47	Maxfield Cry. Coc Fremont Cry. Coi	Readlyn (2½ mi. nw.) Tripoli	J. Strottman E. C. Fink	Readlyn Tripoli	F. H. Wehling H. J. Hankner	Readlyn Tripoll

48 49 50	Dayton Cry. Coc	Sumner (4 mi. 8.)	J. H. Kasemeier	Rochester, N. Y.	Roy H. Scoles	Plainfield Sumner
51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69	Janesville Cry, Assn. C	Janesville Readlyn Sumner Fairbank (4½ mi. sw.) Tripoll Waverly (4½ mi. n.) Denver (4 mi. n.) Tripoll Sumner Sumner Sumner (6 mi. sw.) Readlyn Frederika Denver Sumner Sumner Bremer (5 mi. n.)	H. A. Griese	Tripoli Tripoli, R. 2 Sumner Sumner, R. 4 Sumner, R. 6 Dunkerton, R. 2 Frederika Readlyn	H. A. Griese F. W. Bremer F. D. Daniels F. H. Harms D. Bottermann J. G. Nichols Wm. Ambrose J. Ambrose L. B. Olds Robt. Wagner L. L. Zbornik C. H. Rohrssen Wm. Dilley J. W. Wedemeyer F. Wills Robt. Kerr	Sumner Fairbank Waverly, R. 2 Waverly, R. 5 Waverly, R. 1 Tripoll Tripoll Sumner Sumner, R. 4 Sumner, R. 6 Dunkerton, R. 2 Frederika Denver Sumner, R. 7 Waverly, R. 1
	Buchanan County—					
70 71 72 73 74 75 76 77 78 79	*Wapsie Valley Cry. Co. 8 Otterville Creamery 8 Stanley Cry. Co. 6 Lamont Fars. Cry. Assn. c L. Schnittjer Co. 6 Jesup Cry. Co. 6 Hazelton Fars. Co-op. Cry. c Fairbank Fars. Cy. Co. c Buffalo Valley Cry. Co. 6 *Rush Park Dairy Farm 8	Independence Otterville Stanley Lamont Rowley Jesup Hazleton Fairbank Winthrop Independence	J. H. Reed C. L. Bright J. W. Basham A. J. Langley Guthrie Simmons	Independence Stanley Lamont Rowley Jesup Hazleton Fairbank Winthrop	R. E. Bantz Geo. Coyle E. A. Cole J. H. Reed E. A. Howey Matt McDowall C. E. Brant Andrew Peterson	Otterville Oelwein Lamont Rowley Jesup Hazleton Fairbank Winthrop
	Buena Vista County-					
80 81 82 83 84	Farmers Co-op, Cry. Co. c Linn Grove Cry. Co. i Fars. Cry. & Produce Co. c Buena Vista Cry. Co. s Sioux Rapids Cry. Co. i Albert City Cry. c	Alta Linn Grove Newell Storm Lake Sioux Rapids Albert City	E. P. Kruse O. L. Ford F. R. Ballantyne	Newell Storm Lake	W. J. McPheeters	Linn Grove Newell Storm Lake
85 86	Butler County— Monroe Central Cry. Co8 Clarksville Cry. Coi	Eleanor (1 mi. n.)	Chas. Rohde M. J. Johnson	Aplington	Chas. Rohde M. A. Jones	Aplington Clarksville

Number	Name of Creamery	Located at or Near	Name of Proprietor, Secretary or Manager	P. O. Address of Proprietor, Secretary or Manager	Name of Buttermaker	P. O. Address of Buttermaker
88 89 90 91 92 93 94 95 96 97 98	White Rose Cry, Co.	New Hartford Parkersburg (8 mi. e.) Greene (7 mi. s. w.) Coster Shell Roek New Hartford (3 mi. s.) Kesley	E. S. Philo. T. J. O'Brien. O. F. Courbat E. E. Wilcox J. J. Bergman H. Patterson Frank Fishel A. S. Shook. S. L. Patterson E. C. Capper.	New Hartford Greene Shell Rock Shell Rock New Hartford Kesley Allison Greene Austinville Dumont	J. Jacobson	Parkersburg, R.1 Greene Shell Rock Shell Rock New Hartford Kesley Allison Greene Austinville Dumont
99 100 101 102	*Somers Cry. Co s Pomeroy Cry Co i Moon Bros, Cry. Co i	Somers Pomeroy Manson Rockwell City	H. H. Hopkins H. A. Albrecht Harry A. Moon E. Johnson	Pomeroy, R. 1 Manson	W. H. Graham Geo. F. Allard Chas. G. Moon Lee Fredricks	Pomeroy Manson
103 104 105 106 107 108 109 110	Fars. Co-op. Cry. Co. 0 Willey Cry. Co. i Halbur Cry. Co. i Templeton Cry. Co. c Rose Valley Cry. Co. i Coon Rapids Co-op. Cry. Co. c Selzer Pure Food & Products Co. s Manning Cry. Co. 8	Coon Rapids. Willey Halbur Templeton Roselle Coon Rapids Carroll Manning	Carl V. Ford	Carroll, R. 5 Halbur Templeton Carroll, R. 4 Coon Rapids Carroll	M. J. Wagner Frank Doneger Clemens Kohorst	Carroll, R. 5 Halbur Templeton Carroll, R. 4 Coon Rapids Carroll
111 112	Cass County— *Atiantic Produce Co	AtlanticCumberland	W. F. Priebe Co E. Euken	Atlantic Wiota	R. T. Grierson Albert Heyn	Atlantic Cumberland

	Cedar County-	1	1			
113 114 115 116 117	Hopewell Cry. Co	Tipton	J. T. Butler C. F. Simmermaker_	West Branch	W. H. Kroeger L. M. Hall R. L. Rector W. L. Sjoan Peter White	West Branch
	Cerro Gordo County—					- I I I I I I I I I I I I I I I I I I I
118 119 120 121 122 123	Sunny Side Cry. Co	Rockwell Plymouth Clear Lake	J. E. Sawyer F. C. Siegfred J. L. Stevens	Clear Lake Rockwell Plymouth	Robt. Bless F. D. Ford C. N. Hart	Plymouth Clear Lake
	Cherokee County-			-)='='	o. comison	Mason City
124 125	Cherokee Cry. & Bottling Worksi White Rose Cry. Co8	Cherokee	Jno. H. Goeb Maud Naffziger	CherokeeSioux City	Vinta at m	Cherokee Marcus
	Chickasaw County-				Thursday	Marcus
126 127 128 129 130 131 132 133	Saude Co-op. Cry. Assn	Saude Jerico Nashua New Hampton Lawier Ionia Fredericksburg Alta Vista	Mike Kearney S. W. Blinn J. W. Krieger P. J. Cooney H. B. Young	Lawler, R. 1 Nashua New Hampton New Hampton Ionia Fredericksburg	John Finegan M. E. McMurray D. W. Mohler A. W. Snyder F. W. Stickman	New Hampton Nashua New Hampton Lawler Ionia
134	Boyd Fars. Co op. Cry. Assnc	Boyd	John Heit	THE TRUTH PLUIT.	H. B. Fortney	
135	Williamstown Cry, Assnc	New Hampton (6½ mi. s.)	C. M. Burmaster	redericksburg.	M. J. Donovan	New Hampton, R. 5
136	Deerfield Creamery Coi	Bassett	E. T. Sadler	R. 4 Waterloo	Geo. Assink	Deceatt DED
	Clay County—					
138 139 140 141 142 143	Spencer Dairy Produce Co	Greenville	P. W. Johnson B. A. Reid N. C. Nielsen C. H. Matravers	Gillett Grove Spencer Everly Webb Langdon Royal	P. W. Johnson J. A. Reid N. C. Nielsen J. F. Oddy	Gillett Grove Spencer Everly Webb Langdon

Number	Name of Creamery	Located at or Near	Name of Proprietor, Secretary or Manager	P. O. Address of Proprietor, Secretary or Manager	Name of Buttermaker	P. O. Address of Buttermaker
146 147 148 149 150 151 152 153 154 155 156 157 158 159 160	Clayton County— Garber Fars, Co-op. Cry. Co	Garber	R. T. Smith Robt. M. Fonda T. H. Allan J. T. Leonard W. A. Robinson H. A. Mallory Fred Mueller E. Probert C. D. Wolcott Wm. L. Fuhrman Geo. Rengnitz H. R. Roderick E. C. Wirkler H. F. Beyer A. E. Nagel	Monona McGregor Elkader Edgewood Osterdoek Guttenberg, R. 2 Volga Strawberry Pt. St. Olaf Elkport, R. 1 Luana Garnavillo Edgewood	J. S. Watson J. T. Leonard Harley Evert	Monona Mediregor Elkader Edgewood Osterdoek Turkey River Volga Strawberry Pt. St. Olaf Littleport Luana Garnavillo Edgewood
161 162	Clinton County— Clinton Co. Cry. Co	Clinton	H. R. Gray	Toronto	Chris. Jessen	644 10th Ave., Clinton Toronto
163 164 165 166	Farmers Co-op. Cry. Co	Wheatland	B. W. Newman	Elgin, Ill.	E. A. Kinsler	Welton
167	Crawford County— . *Nicholson Produce Co8	Denison	Alfred Wright	Denison	H. E. Hansen	Denison
168 169	Parls County— Fars. Co-op. Cry. Assn	Woodward	H. P. Colonkey &	Woodward	Wm Ackerman	Woodward

	Davis County-			1		
171	Bloomfield Cry. Coi	Bloomfield	Newton Richardson	Bloomfield	W. B. Beckley	Bloomfleld
	Decatur County-					
172	*Clarinda Poultry Butter & Egg Co. s	Leon	G. V. Dryden	Clarinda	C. B. Peterson	Leon
	Delaware County-					
173 174 175 176 177 178 179 180 181 182 183 184 185 186 187	Manchester Co-op. Cry. Co	Manchester Earlville Ryan (6 mi. e.) Thorpe Delhi Masonville Manchester Earlville Delaware Dyersville Hopkinton Colesburg Greeley Sand Spring Ryan Manchester	M. E. Blair. E. B. Porter. F. S. Harris. L. Andrews J. M. Dunn. A. D. Long. J. T. Goedken. I. T. Wilson. Robt. A. Gull. J. C. Mathews. J. H. Hanken. Geo. A. Emery	Earlville Delhi Manchester Delhi Masonville Masonville Manchester Earlville Manchester Dyersville, R. 20. Hopkinton Colesburg Greeley Sand Spring	J. W. Appleby Geo. A. Emry	Manchester Earlville Manchester Thorpe Delhi Masonville Manchester Earlville Delaware Dyersville, R. 20 Hopkinton Golesburg Greeley Sand Spring Ryan Manchester
	Des Moines County—					
189	Danville Co-op. Cry. Cos	Danville	W. M. Irwin	Danville	A. W. Pyle	Danville
	Dickinson County—					*
190 191 192 193	Lake Park Co-op. Cry. Co. 8 Milford Fars, Butter & Cheese Assn. 8 Terrill Co-op. Cry. Assn. c Superior Co-op. Cry. Assn. c Dubuque County—	Milford	Fred W. Born R. A. Klingbeil	Milford Terril	F. E. StarrFred W. BornP. C. Flaskegard Theo. Erickson	Milford Terril
194	Crown Dairy Coc	Dubuque	A M Conzett	2279 Jackson St.,		
195 196 197 198	Holy Cross Cry. Co	Holy Cross Zwingle Worthington Sherrill	Leo. Sweeney H. S. Hague C. Boehler J. C. Boleyn	Dubuque N. Buena Vista_ Zwingle Worthington 1060 Rohmberg Ave. Dubuque	Jas. McCool H. S. Hague C. N. Boehler, Jr. Fred Koeller	N. Buena Vista Zwingle Worthington Dubuque, R. 1
199 200	New Vienna Central Cry. Co8 Globe Cry. Coc	New Vienna Luxemburg	Henry Smith	New Vienna N. Buena Vitsa	W. C. Frank Jno. P. Crippes	New Vienna, R 23

Number	Name of Creamery	Located at or Near	Name of Proprietor, Secretary or Manager	P. O. Address of Proprietor, Secretary or Manager	Name of Buttermaker	P. O. Address of Buttermaker
201 202 203 204 206 206 207 208 209 210 211	Dubuque County-Continued Farley Cry. Co	Parley Fillmore Dubuque Rickardsville Dubucue Tyersville Tyersville (5 m. ne.) Dubuque Balltown Dubuque	R. E. Curve. A. O. Elvidge. C. O'Neill. Andrew Fluetsch Albert J. Kern. John Ramm P. J. Conlin. Henry W. Laude. Albert Cummer	Dubuque Dyersville Farley Cascade Dubuque, R. 4 Specht's Ferry	Joe Taylor Henry Koehler	Cascade, R. 28 Dubuque Waupeton Dubuque Dyersville, R. 21 Cascade Dubuque, R. 4 Specht's Ferry
212 213 214 215 216	Emmet County— Fars. Cry. Co	Armstrong Estherville Wallingford Ringsted (8 mi. sw.) Ringsted (3 mi. ne.)	W. A. Kerr O. O. Refseil Jno. C. Bosold	Estherville Wallingford Graettinger, R. 2	J. C. Jensen Julius Jensen	Estherville Wallingford Hoprig
217 218 219 220 221 222 223 224 225 226 227 228 228 230 231	Payete County— Oran Cry. Co	Oran Westgate (35 ml. n. e.). Oelwein (4 ml. s. w). Alpha Sunner (7 ml. n. e.). Stanley (55 ml. n. e.). Stanley (55 ml. n. e.). Watcoma Wadcona Wadcona Westgate St. Lucas Sunner (75 ml. n. w.). Oelwein (4 ml. n. w.). Maynard Hawkeye	Thos. E. Sadler. Juo. T. Gager. F. F. Wittenburg. Geo. Jellings Thos. McEnaney F. J. Schoeder F. S. Coleman. G. H. Hackman. J. S. Briggs D. N. Holmes. H. H. Meyer. J. C. Lewis.	Summer, R. 1 Hazelton, R. 2 Alpha Summer Stanley Waucoma Wadena Westgate St. Lucas Fayette, R. 1. Randalia Independence Maynard	L, C. Barnes Thos. E. Sadler. J. F. Cummings C. A. Day C. S. Payne. W. H. Fischeld E. Z. Corr E. H. Homann Ben H. Kuennen F. M. Zell Frank Bowdish Anton Smith C. B. Bracy	Summer Hazelton, R. 2 Alpha Summer Stanley Waucoma Wadena Westgate St. Lucas Summer, R. 2 Randalia Oelwein, RFD Maynard

232 233 234 235 236 237	Fayette Cry. Assn.	Fayette Eigin Clermont Arlington Oelwein West Union	Melchoir Luchsinger. F. F. Ferguson Floyd Finney L. C. Harwood	Elgin Clermont Arlington Oelwein	G. M. Miller. Ed Hanson Ammon Erickson E. E. Mittlestadt Hans Broby B. F. Schultz.	Elgin Clermont
3.1	Floyd County-					
238 239 240 241	Rockford Co-op. Cry. Assn	Rockford Nilesville Charles City Nora Springs	Frank Brunner N. H. Nelson	Charles City	A. Larsen	Charles City Charles City
26	Franklin County-					
242 243 244 245 246 247 248	Fars. Co-op. Cry Co	Dows Latimer Coulter Ackley Alexander Hampton Bradford	Chas. Johnson Geo. Dohmann F. J. Martin B. G. Cunningham F. L. Tanner	Hampton Ackley Alexander Hampton	Frank L, Larson Rasmus Nielsen Herbert Soballe Wm. Kotenbeutel H. E. Gates Carl Meier. H. Brokaw	Latimer Coulter Ackley Alexander
	Fremont County-					
249	Sidney Co-op. Cry. Co8	Sidney	H. S. Magel	Sidney	M. C. Peterson	Sidney
	Greene County—					
250	G. W. Nicholson Co	Grand Junction	Wilbur W. Wertz	Grand Jet	Geo. O. Fisher	Grand Jet.
251 252 253 254 255 256	Reinbeck Cry. Co	Dike (4½ mi, ne.) Stout (2 mi, sw.) Grundy Center Parkersburg (7 mi, s.)	Sweitzer Bros	Stout Grundy Center	E. E. Sweitzer	Reinbeck Cedar Falls Stout Grundy Center Stout Ackley, RFD.
	Guthrie County—					
257 258 259 260	Menlo Cry. Co. 6 Guthrie Center Co-op. Cry. 6 Casey Cry. Co. 8 Bayard Co-op. Cry. Co. 0	Menlo Guthrie Center Casey Bayard	J. A. McLaughlin	Guthrie Center	A. W. Hanks W. E. Cline	Guthrie Center Casey

Name of Creamery	Located at or Near	Name of Proprietor, Secretary or Manager	P. O. Address of Proprietor, Secretary or Manager	Name of Buttermaker	P. O. Address of Buttermaker
Hamilton County-					
Stratford Co-op. Cry. Co	Stratford Ellsworth Randall	Chris. Morck S. Stenberg	Stratford Ellsworth	Chris. Morek O. B. Stenberg	Jewell Stratford Elisworth Randall Webster City
Hancock County-					
Kanawha Fars. Mut. Cry. Coc Concord Cry. Coc Fars. Co-op. Cry. Coc Goodell Co-op. Cry. Coc Crystal Cry. Coc	Kanawha Garner Garner Goodell Crystal Lake	Thos. H. Thompson G. H. Lade J. Klesel John Smith J. P. Johnson	Garner Garner Goodell Crystal Lake	J. A. Fenger C. R. Conway M. M. Sorenson	Woden Kanawha Garner Goodell Crystal Lake Britt
Hardin County—					
Alden Co-op. Cry. Co. c Eldora Cry. Co. 4 Hubbard Co-op. Cry. Co. c Hubbard Co-op. Cry. Co. c Concord & Scott Cry. Co. c Owasa Co-op. Cry. Co. c S. P. Wadley Co. 8	Eldora Hubbard Iowa Falls Radcliffe (5 mi. sw.) Owasa	Jensen & Hadley H. K. Granner E. E. Benedict LeRoy Anderson W. N. McLenon	Eldora Hubbard lowa Falls Radcliffe Owasa	R. R. Hadley Fred Herzog J. R. Jones J. F. Burretts G. J. Gudknecht	Hubbard Iowa Falls Radcliffe Owasa
Harrison County—				4 . "	
Magnolia Cry. Coc *Roundy-MeMurray Cos	Magnolia	F. H. Cadwell H. J. McMurray	Logan, R. 2 Woodbing	B. F. O'Hart Walter Evans	Magnolia Woodbine
Howard County-					
Fars. Co-op. Cry. Coc Saratoga Co-op. Cry. Assnc	Protovin	C. P. Pecknovsky Jno. H. Viebrock	Protovin	Wenzel Kaderabek Henry Foss	Protovin
	Hamilton County—	Hamilton County— Jewell Cry. Co.	Hamilton County—	Name of Creamery	Name of Creamery

28 28 28 28 29	7 Schley Cry. Co. 8 Fars. Co-op. Cry. Assn. 9 Fars. Cry. Co.	i Schley	L. A. Eggerichs	- Chester	G. C. Plummer	Cresco Chester
291 292 293 294 295 206	Rutland Cry. Assn. Wacousta Cry. Assn. *Humboldt Cry. Co. Owiake Cry. Co.	Rutland Ottosen Humboldt	A. O. Clave	Rutland Ottosen Humboldt	Joe Bogh C. C. Anker A. H. Bertelson Wm. Larsen	Rutland Ottosen Humboldt
297 208 209 200 301 302 203 304	Shimer Cry. Co. C Genoa Bluff Cry. Co. C Ladora Cry. Co. C Marengo Fars. Co-op. Cry. 8 Vietor Co-op. Cry. Co. C Troy Cry. Co. C York Cry. Co. C Parnell Co-op. Cry. Co. C Ida County—	Conroy Ladora (6 mi. se.) Ladora Marengo Victor Wihiamsburg Williamsburg Parnell	E. J. Warren O. W. Gode H. F. Lenocker Geo. C. House	Williamsburg R.4 Ladora Marengo Victor Williamsburg	Geo. P. Byrne J. O. Ersland B. S. Wallace H. F. Lenocker W. R. Edwards	Marengo R. 1 Ladora Marengo Victor Williamsburg
305	Murphy-Wehde Produce Co	Holstein	Gus. Wehde	Holstein	John Suiter	Holstein
306 307 308 309 310 311 312 313 314 315 316 317	Springbrook Cry. Co. 8 Preston Cry. Assn. c Farmers Union Co-op. Cry. Co. c Fulton Co-op. Cry. Co. c Fars. Cry. Co. c Bellevue Cry. Co. t Jasper County—	Maquoketa St. Donatus Lamotte Spring brook Preston Preston Maquoketa Fulton Sabula Bellevue	F. D. Hansen Heinrig & Frantzan Hoffman Cry. Co. Jno. Gonner Balch W. Newman Samuel MeNeil C. Hinkleman John Heide F. O. White J. F. Runkle	Maquoketa St. Donatus Lamotte Springbrook Eigin, Ill. Preston Singuoketa Fulton Sabula Bellevue	D. J. Hagerty. J. P. Frantzan. J. P. Frantzan. J. D. Schurbon. J. D. Schurbon. J. A. J. Negus J. A. Gordon A. Otner Casper Myrom T. A. Golden Oscar Hanapel	Andrew Maquoketa St. Donatus Lamotte Springbrook Preston Preston Maquoketa R. 1 Fulton Sabula Bellevue
818	Baxter Dairy Coc Newberg Cry. Cos	Baxter Newburg	Aug. Klemme Jens Jensen	Baxter Newburg	G. W. Peterson Jens Jensen	Baxter Newburg

Number	Name of Creamery	Located at or Near	Name of Proprietor, Secretary or Manager	P. O. Address of Proprietor Secretary or Manager	Name of Buttermaker	P. O. Address of Buttermaker
320	Jefferson County— *Fairfield Pure Butter Co	Fairfield	Fisher, Long & Lyngholm	Fairfield		
321 322 323 324 325 326 327 328 329	Fawn Creek Cry. Co. i Fars. Co-op. Cry. Co. c Downerville Fars. Cry. Co. i Scotch Grove Co-op. Cry. Co. c Langworthy Co-op. Cry. Co. c Amber Co-op. Cry. Co. c Fars. Co-op. Cry. Co. c Anamosa Cry. Co. i *Iowa Creamery Co. 8	Monticello Monticello (5 mi. nw.) Scotch Grove Langworthy Amber Center Junction	O. W. Brazelton C. R. Wilder H. R. Jacobs Jno. H. Batchelder P. B. Daly C. A. Burmeister H. M. Derleth	Monticello Monticello Scotch Grove Langworthy Anamosa R. 4 Center Jct. Anamosa	Jake Zubrod Fred Lehman C. R. Wilder W. A. Rizer Jno. H. Batchelder S. F. Nickels A. F. Seneff H. M. Derleth Otto Hokum	Anamosa Monticello Monticello Scotch Grova Langworthy Amber Center Jet. Anamosa Oxford Jet.
330 331	Keokuk County— *Geo. M. Griffin Cry. Co	Sigourney What Cheer	Geo. M. Griffin S. E. Reisman	Sigourney What Cheer	O. A. Jones Robt. Storey	Sigourney What Cheer
332	Autocrat Dairy Coi	Iowa City	Wm. A. Fry	Iowa City	Wm, F. Wyman	Iowa City
333 334 335 336 337 338 339 340 341 342 343	Fars. Co-op. Cry. Assn. c Rahm Bros. Cry. Co. i Whittemore Cry. Co. c c Lotts Creek Co-op. Cry. Co. c c Swea City Co-op. Cry. Co. c c Sexton Co-op. Cry. Co. c c Seneca Co-op. Cry. Co. c c Lone Rock Co-op. Cry. Co. c Fars. Co-op. Cry. Co. c	St. Benedict Whittemore Lone Rock (Smi. sw.) Swea City St. Joseph Sexton Fenton (7 mi. ne.) Lone Rock Irvington	E. F. Rahm Thos. Carmody Jno. Markgraf R. H. Walker Nicholas Gales C. A. Little M. Jensen Robt. Jacob A. P. Ives	St. Benedict Whittemore Lone Rock Swea City Bode R. 1 Sexton Fenton Lone Rock R. 1 Irvington	F. L. Haldeman A. M. Whitney Wm. Kessler Carl Nelson L. H. Larsen W. H. Anderson Will Helgason A. R. Wilder	St. Benedict Whittemore Lone Rock Swea City Sexton Fenton Lone Rock Lyvington

344 345 346 347 348 349 350 351	Germania Co-op. Cry. Co.	Bancroft Burt Algona (5 mi. ne.) Algona Wesley	C. F. C. Laage Frank A. Fangman M. E. Warner H. J. Bode J. B. Hofins	Fenton Bancroft R. 2 Burt Algona Algona Wesley	A. J. Doleschal R. E. Clemons M. J. Bobo L. P. Anderson Fred F. Lockwood	Fenton Bancroft Burt Algona Algona Wesley
352	S. P. Pond Coc Linn County—	Keokuk	F. H. George	Keokuk	J. P. McDonald	Keokuk
353 354 355 356 357 358 359 360 361	Walker Iowa Creamery i Springville Cry. Co. i Ely & Western Cry. Co. s Center Point Cry. Co. i Valley Farm Cry. Co. i Central City Cry. Co. s *Gurler-Barth Co. s Rogers Cry Co. i Coggon Cry. Co. i	Walker Springville Ely Center Point Central City (3 mi. nw.) Central City Cedar Rapids Rogers Coggon	C. A. Batchelder Frank J. Dolezal C. N. Pollock P. G. Henderson E. E. Henderson B. H. Shinn	Springville Ely Center Point Central City R. 3 Central City Cedar Rapids Cedar Rapids	S. W. Laird J. S. Marshall Frank Dolezal Leo Denison Earl George W. A. Stone C. C. McCue W. I. Dilger O. C. Capper	Springville Ely Center Point Central City R, 3 Central City Cedar Rapids Rogers
362	Louisa County— Oakville Cry. Co	Oakville	Geo. W. Graham			
363 364 365	Inwood Cry. Coi George Cry. Coi Rock Rapids Cry. Coi	George	H. H. Hopkins	Rockford, Ill., 216 Brown Bld.	H. C. Nelson Ed. Wilson F. B. Lucia	George
366	Mahaska County—					
367	•	Pella	David VanSittert	Pella	T. Smorenburg	Pella
368 369 370 371	Marshall County— Marshalltown Cry Coi	Marshalltown State Center	J. J. Bork R. Robinson L. H. Armbrecht	Marshalltown State Center	Carl A. Carlson	314 S. Third Ave. Marshalltown State Center

CREAMERY LIST-CONTINUED

Number	Name of Creamery	Located at or Near	Name of Proprietor, Secretary or Manager	P. O. Address of Proprietor, Secretary or Manager	Name of Buttermaker	P. O. Address of Buttermaker
	Mills County-	,				
372	Glenwood Cry, Cos Mitchell County—	Glenwood -	L, E, Geil	Glenwood	F. D. Shiflet	Glenwood
373 374 375 376 377 378 477	New Haven Cry. Co. i Little Cedar Cry. Co. i Osage Co-op. Cry. Assn. c St. Ansgar Cry. Co. c Fars. Co-op. Cry. Co. c Rock Creek Co-op. Cry. Assn. c Stacyville Cry. Co. i	Little Cedar Osage St. Ansgar Orchard Osage (9 mi. sw.)	G. L. Helfter John Torsleff M. A. Tollefson E. O. Clapper H. L. Johnson	Little Cedar Mitchell St. Ansgar Orchard Rudd	Julius Brunner	Little Cedar Osage St. Ansgar Orchard Osage
	Monona County-					
380	Moorhead Cry. Co	Moorhead	P. D. Nelson	Moorhead	P. D. Nelson	Moorhead
381	Albia Cry. Coi Muscatine County—	Albia	Sam Jones	Albia	Earl Burlingame	Albia
382	Museatine Produce & Ice Co	Muscatine	Dr. T. F. Beveridge.	Muscatine	J. E. Jones	Muscatine
383 384 385 386 387	Union Cry. Co	Paullina Hartley Sutherland Sheldon Paulina (6½ mi. sw.)	J. C. Joslin Adolph Christensen D. A. Miller	Paullina Hartley Sutherland Sheldon Paullina	J. C. Joslin Adolph Christensen L. W. Woodiwiss Wm. Gehrls	Sutherland Sheldon
	Osecola County—					
388 389 390	Ashton Cry. Co	Melvin	Fred J. Bauman	Melvin	Geo. W. Wheeler	Melvin

$\frac{391}{392}$	Sibley Cry. Co	Sibley	L. Lohnbakken L. J. Hagerty	Sibley	Jno. De Vrie H. A. Screedan	Sibley Harris
	Page County-					
393	*Clarinda Poultry Buttter & Egg Co. 8	Clarinda	G. V. Dryden	Clarinda	O. J. Gustin	Clarinda
	Palo Alto County-					
394 395 396 397 398 399 400 401 402 403 404 405	Depew Cry. Co. C	Cylinder (6 mi. n.) West Bend Ruthven Graettinger (5\{\}\) mi. w.) Mallard Graettinger Emmetsburg Curlew Cylinder Ayrsbire Fairville Graettinger Rodman	T. C. Truog Charley Jensen Lewis Stuchmer D. Z. Martin	West Bend Ruthven Gracttinger Mallard Emmetsburg R. 3 Emmetsburg Curlew Cylinder Ayrshire Cylinder Gracttinger	O. W. Dubbs J. H. Tripp Myron Williams T. R. Wilson Matt. P. Junker M. Anderson C. W. Larsen V. A. Reid Fred Shellman W. D. Kucker Wm. Matters	Cylinder West Bend Ruthven Graettinger, R. 1 Mallard Graettinger R. 1 Emmettsburg Curlew Cylinder Ayrshire Cvlinder Graettinger Rodman
100	Plymouth County-					
407 408 409 410	LeMars Cry. Co. 8 Remsen Cry. Co. 8 Payne Bros. Cry. Co. i Grant Twp. Cry. Co. c	Remsen Kingsley	H. H. Hopkins Carl Lissner	Rockford III	P. E. Hornor Jas. Lovestrom Carl Lissner B. H. Loeifers	LeMars Remsen Kingsley LeMars R. 4
	Polk County-					
411 412 413	*Des Moines Cry. Co	Des Moines	L. O. Loizeaux	Des Moines	Nels, Danielson	4100 Kingman, DM Des Moines Des Moines
	Pocahontas County-					
414 415 416 417	Pocahontas Cry. Co. i Laurens Cry. Co. i Palmer Cry. Co. i Plover Cry. Co. i	Laurens Palmer	J. G. Hinn Geo. Siebels	Palmer	F. W. Johnson Ed. Johnson	Laurens Palmer
	Pottawattamie County-					
418 419	Waterloo Cry. Co	Council Bluffs	Leroy Corliss D. F. Anderson	Omaha, Neb Council Bluffs	J. A. Dutton	Council Bluffs

Number	Name of Creamery	Located at or Near	Name of Proprietor, Secretary or Manager	P. O. Address of Proprietor, Secretary or Manager	Name of Buttermaker	P. O. Address of Buttermaker
- 1	Poweshiek County-					
420 421 422 423 424 425 126	Ewart Co-op. Cry. Co c Deep River Cry. Co 8 'Grinnell Cry., Ice & Cold Storage Plant i Springbrook Cry. Co 8 Springbrook Cry. Co 8 Fars. Co-op. Cry. Co c Brooklyn Cry. Co c	Grinnell	J. W. Fowler B. W. Newman Baleh W. Newman J. R. Rivers	Grinnell Elgin, Ill Grinnell	C. C. Bomberger H. J. Goebel F. O. Klingbeil O. W. Hicks F. J. Crowther Geo. H. Guthrle	Grinnell Montezuma Guernsey Jacobs
	Sac County-					
427 428 429 430 431	Hillman Cry. Co. i Wall Lake Cry. Co. i Eden Cry. Co. s Fars. Co-op. Cry. Co. c Lake View Cry. Co. i	Lytton Wall Lake Schaller Early Lake View	C. W. Davis Geo. S. Angier L. W. McCreery	Wall Lake Schaller Early	Fred Hillman C. W. Davis W. F. Reid L. W. McCreery E. C. Rogers	Wall Lake Storm Lake Early
	Scott County-					
432 433	Star Cry. Co	Long Grove Davenport				
	Shelby County—					
434 435 436 437 438 439	Prairie Rose Cry. Co. c Fars. Mut. Co-op. Co. c Buck Valley Cry. Co. c Center Cry. Co. c Earling Cry. Co. i The Harlan Cry. Co. 8	Walnut (9 mi. n.) Kirkman (5 mi. e.) Kimballtown (5 mi. nw.) Harlan Earling Harlan	Paul Bjorn Clarence Johnson Brunk & Kenkel	Kirkman R. 1 Harlan R. 2 Harlan R. 2 Earling	Chris Back Nis E. Hanson Peter Nyman L. C. Langesen J. A. Bruck M. Ankerstjerne	Kirkman R. 1 Harlan R. 5 Harlan R. 2 Earling
	Sioux County-					
440 441 442 443	Hull Cry. Co. i Hawarden Cry. Co. i Hospers Cry. Co. i Alton Cry. Co. i	Hull Hawarden Hospers Alton	Emil Zorr	Hawarden	Jno. J. Marx	Hawarden

444 445 446 447 448	Fars. Mut. Co-op. Cry. Assn	Orange City Boyden Sioux Center Rock Valley Granville	Jno. Rensink Jelgerhuis & Co F. Vander Stoen	Boyden Orange City Rock Valley	Frank Welter J. te Veltrup Ed Vander Stoep	Boyden Sioux Center Rock Valley
	Story County-					
449 450 451 452 453 454 455 456	Fars. Mut. Co-op. Cry. Assn	Gilbert Huxley Roland Story City Slater Zearing Ames McCallsburg	Sam Maland E. M. Rod Alex Henderson Chas. Skortman C. P. Bean Prof. M. Mortensen	Huxley	C. P. Lake O. J. Olson Geo. Wick Sam Severeide Clarence Clark C. E. Buffington Harry J. Evans C. T. Knutson	Huxley Roland Story City Slater Zearing Ames
	Tama County-					
457 458 459 460 451	Fars. Cry. Co. 8 J. H. Neil Cry. Co. i Gladbrook Cry. i Springbrook Cry. Co. 8 Traer Cry. Co. i	GladbrookElberon	J. H. Neil H. F. Bever	Edgewood Elgin, Ill	W. D. Wenthe J. H. Neil Clarence Mitchell F. L. Francisco G. E. Olsen	Tama Gladbrook Elberon
	Taylor County-					
462 463	Bedford Cry. Coi Peacock Butter & Ice Cream Coi	Bedford Lenox	Frank Dunning A. H. Peacock	Bedford Lenox	Leslie KloppA, H. Peacock	Bedford Lenox
	Union County-					
464 465	Fars. Co-op. Cry. Coc Clarinda Poultry, Butter & Egg Co.s	Afton Creston	B. M. Breed G. V. Dryden	Afton	V. O. Williams Leonard Brotherton_	Afton Creston
	Wapello County-					
466	*Yorkshire Cry. Co8	Ottumwa	R. N. Morrell	Ottumwa	C. A. Gage	Ottumwa
	Washington County-					
467	Hawkeye Condensed Milk Co i	Brighton	T. Thompson	Brighton		
	Wayne County—					
468 469 470	Old Colony Cry. Coi	Humeston	J. L. Humphrey	Humeston	M. W. Bixby	Humeston

Number	Name of Creamery	Located at or Near	Name of Proprietor, Secretary or Manager	P. O. Address of Proprietor, Secretary or Manager	Name of Buttermaker	P. O. Address of Buttermaker
471 472 473	Webster County— Ft. Dodge Cry. Co	Dayton	J. A. Cling	Dayton	C. L. Mills	Ft. Dodge Dayton Gowrie
	Winnebago County-		360			Forest City
474 475 476 477 478 479 480 481	Forest City Co-op. Cry. Co. c Lake Mills Cry. Co. c Lincoln Co-op. Cry. Co. c Scarville Cry. Assn. c Vinji Cry. Assn. c Thompson Co-op. Cry. Co. c Buffalo Center Cry. Co. c Leland Co-op. Cry. Co. c	Forest City Lake Mills Rake Searville Scarville Thompson Buffalo Center Leland	M. M. Tapager	Lake Mills Rake Searville Scarville Thompson Buffalo Center	E. A. Jensen carl G. Hoyland Henry Springer Soren Kristensen H. C. Standel C. C. Clifton H. C. Thompson S. O. Rusley	Lake Mills Rake Scarville Scarville Thompson Buffalo Center Leland
482 483 484 485 486 487 488 490 490 491 492	Winneshiek County— L. T. Fosse & Sons	Oss'an (I m, sw.) Nordness Cresco Highlandville Newhouse, Minn. (8 mi. s.) Festina Calmar	J. N. Bragestad Ed Hoiness J. J. Bjerke Bidne & Akre W. A. Schrandt A. A. Olson W. H. Emmons	Ridgeway Rogeway Ossian Decorah R. 1 Kendallville Saring Grove, Minn. Highlandville Calmar, R. L. Calmar Burr Oak Decorah	G. H. Bakken. Ola H. Hauge Vietor V. Johnson Ed. Hoiness P. M. Peterson Peter J. Bidne.	Ridgeway Ridgeway Ossian Decorah, R 2 Kendallville Spring Grove, Minn. Highlandville Calmar, R 1 Calmar Burr Oak Decorah
493 494 495 446 497	Worth County— Joice Cry. Co. c Tenold Cry. Co. c Brookfield Cry. Assn. c Hartland Dairy Assn. c Fars. Co-op. Cry. Co. c	Northwood (11 m, sw.)	O. K. Storre	Kensett R. 1 Northwood Emmons, Minn	A. O. Peterson A. O. Dahlen	Joica Northwood Northwood Northwood Manly

498 499 500 501	Fars. Butter & Cheese Assn. c Kensett Cry. Co. i Fertile Co-op. Dairy Co. c Hanlontown Cry. Co. c	Fertile	J.	A.	Johnson	Kensett	N. 6	yllick	Kensett
	Woodbury County-								
502 503 504 505	*Glendell Cry. Co	Sioux City	J.	H.	Walker Whittemore	Chicago, Ill Sioux City	C. I	. Smith	Sioux City
506 507 508 509 510	*Fountain Cry. Coi Norway Co-op. Cry. Coc Clarion Cry. Assnc Rowan Co-op. Cry. Coc Fars. Co-op. Cry. Coc	Clarion Rowan	Wie A.	J. ert C.	Johnson Rietz	Belmond R. 3 Clarion	Anti	Foss	Kanawha R 5 Clarion

CHEESE FACTORY LIST

19dmul	Name of Factory	Located at or Near	Name of Proprietor, Secretary or Manager	Address	Name of Cheesemaker	Address
1	Bremer County-					
-	Janesville Cheese Factory 8 Janesville Geo. V. Fowler Waterloo Chas. Rye Janesville	Janesville	Geo. V. Fowler	Waterloo	Chas. Rye	Janesvilla
	Cass County-					
01	Lewis Cheese Factory	Lewis	M. E. Delean Lewis	Lewis	M. E. Delean	Lewis
	Chickasaw County-					
00	Ionia Cheese Factoryi Ionia	Ionia	U. W. Kann Ionia	Ionia	Kann Bros Ionia	Ionia
	Howard County-					
*	Clover Leaf Cheese Factoryi Cresco	Cresco	J. J. House Cresco J. J. House	Cresco	J. J. House	Cresco
	Washington County-					
10	Dublin Cheese Factoryi Dublin	Dublin	J. S. Mangold	Washington	Washington J. S. Mangold	Washington
	Wayne County-					
9	DeHaan Cheese Factoryi Lineville		Matthew DeHaan Linevills	Linevilla	Matthew DeHaan Lineville	Lineville

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