INDEX

ILLUSTRATIONS.

STATE OF IOWA

1916

REPORT OF THE

Dairy and Food Department

FOR THE

YEAR ENDED OCTOBER 31, 1916

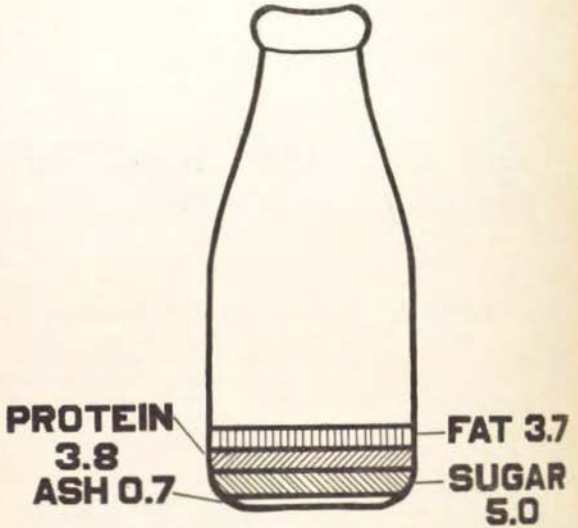
W. B. BARNEY

STATE FOOD AND DAIRY COMMISSIONER

Published By

STATE OF IOWA

DES MOINES



This figure shows the average quantities of the principal food materials in one quart of milk.

LETTER OF TRANSMITTAL.

HON. G. W. CLARKE, *Governor.*

SIR: In compliance with the law, I have the honor to submit herewith the Thirtieth Annual Report of the Dairy and Food Commissioner.

W. B. BARNEY,
Dairy and Food Commissioner.

Des Moines, November 15, 1916.

ROBERT HENDERSON, STATE PRINTER
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ISSUED JANUARY, 1917

OFFICERS AND EMPLOYEES OF THE DAIRY AND FOOD COMMISSION.

Commissioner	Wm. B. Barney	Des Moines
Deputy	B. C. Iliff	Des Moines
Chief Inspector Weights and Meas.	Edward C. Lytton	Des Moines
Inspector Weights and Measures	A. B. Briggs	Ottumwa
Inspector Weights and Measures	F. J. Nolan	Des Moines
Assistant Commissioner	B. O. Brownlee	Atlantic
Assistant Commissioner	Guy M. Lambert	Newton
Assistant Commissioner	H. W. McElroy	Des Moines
Assistant Commissioner	R. E. Clemons	Waterloo
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Assistant Chemist	W. H. Harrison	Des Moines
Assistant Chemist	Geo. H. Chittick	Des Moines
Dairy Inspector	O. P. Thompson	Waterloo
Dairy and Food Inspector	H. E. Forrester	Charles City
Dairy and Food Inspector	L. L. Flickinger	Carroll
Dairy and Food Inspector	L. P. Anderson	Spencer
Dairy and Food Inspector	F. W. Stephenson	Colwein
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Food Inspector	M. E. Flynn	Burlington
Food Inspector	S. O. Van De Bogart	Des Moines
Food Inspector	J. W. Milnes	Creston
Food Inspector	J. S. Bittner	Cedar Rapids
Food Inspector	C. S. Bogle	Fairfield
Food Inspector	C. O. Frazer	Council Bluffs
Chief Clerk	A. W. Day	Des Moines
License Clerk	R. V. Murphy	Des Moines
Stenographer	Elma Schnack	Des Moines
Stenographer	Margie Garrity	Des Moines
Stenographer	Vera Acklin	Des Moines

LAWS ENFORCED BY THE COMMISSIONER

Dairy Law.
Pure Food Law.
Agricultural Seed Law.
Concentrated Feeding Stuffs Law.
Condimental Stock Food Law.
Paint and Linseed Oil Law.
Turpentine Law.
Weight and Measure Law.
Sanitary Law.
Cold Storage Law.
Commercial Fertilizer Law.
Calcium Carbide Law.

REPORT OF THE COMMISSIONER

As the Federal Food and Drugs Act and Dairy and Food Laws of this State became effective ten years ago, I believe it fitting at this time to recognize the benefits derived by the consuming public and honest dealers, not only in this State but the entire nation, resulting from the enactment and enforcement of these laws.

The object of our State Dairy and Food Laws is to promote the dairy industries of this state, to prevent the manufacture and sale of dairy or other food products containing harmful or deleterious substances, and to prevent fraud in the sale of food products. While the later object was quite adequately covered in the laws enacted in 1906, it was found difficult to give the customer the desired protection from many forms of contaminated and undesirable products. This difficulty was removed in 1913 by the enactment of the Cold Storage Law and the Sanitary Food Law by the Thirty-fifth General Assembly. In their present amended forms, Iowa's laws pertaining to the manufacture and sale of dairy and other food products give purchasers the assurance that the products are what they purport to be, in kind and amount; that they are free from deterioration and unwholesome additions, and that they possess their full nutritive value.

The consumers' interest we have consistently endeavored to protect without working an unnecessary hardship on the honest manufacturer and dealer. The department has not busied itself in looking for cases arising out of mere technical violation of the laws enforced by us, but has never failed to institute vigorous proceedings whenever such action was necessary. We believe that the enforcement of food laws is contributory to the moral force of a community and that the failure to enforce the law may contribute to the promotion of dishonesty. This point can perhaps be best illustrated by citing a common instance, as follows:

Linseed oil is a staple article of commerce, handled frequently by the druggist, the hardware merchant, the implement dealer, and others in small towns. Say there are six different dealers handling

this product and the wholesale price is such that a pure, unadulterated oil cannot be retailed at less than 90 cents per gallon. Five of these men are by nature honest, one of them is a natural born crook and adds to this linseed oil 20 to 30% of inexpensive petroleum oil and cuts the retail price of his oil to 80 cents. The consuming public is all in favor of one price, and that the lowest. The result is that the unscrupulous dealer receives the patronage and the other five dealers, in self-defense and with many qualms of conscience, also add the adulterant to meet the cut price. We now have six dishonest men, where there was but one before. This sort of thing has and may happen where laws regulating such matters are not enacted and enforced. On the other hand, if the department prosecutes and convicts one or more of these dealers, the prosecution has a wholesome effect on the entire community, causing them to respect this, as well as other laws.

CONCENTRATED FEEDING STUFFS.

I know of no field in which an efficient system of inspection is more effective than in the present feeding-stuffs industry. These commodities are purchased in car load lots by many of our feeders of hogs, horses and both dairy and beef cattle. The so-called feeding-stuffs industry has grown at a remarkable rate during the past few years, and the cash value of shipments are larger than the casual observer would estimate.

In control of this and similar commodities shipped into the state, co-operation with the Federal authorities is a necessity.

During the past season our inspectors sampled over 150 car-lot shipments of cotton seed meal, valued at approximately $12,000.00. Of the 150 cars sampled over 100 were found to contain from 2 to 25% less protein than the label declared, or the purchaser's contract called for. As these feeds were bought and paid for before delivered, and neither the shipper nor shipper's agent were located in the state, the purchaser could receive no protection from the state law.

Were it not for our co-operative system with the federal authorities we would be in a compromising position indeed.

At the time of our first experience we took the matter up with Mr. Tolman, Chief of the Central District, U. S. Food and Drug Inspection Service, and worked out a method which not only puts a

stop to the future illegal shipments, but compelled the shippers to reimburse the purchasers for the deficiency in feeding value of the shipments which had been delivered. This plan has been so effective as to return to Iowa purchasers over $3,000.00 since the campaign instituted in February. Mr. Tolman has given the Iowa Department every assistance that could be asked. I believe that the authorities works to the mutual advantage of both departments; the questions of responsibility and jurisdiction are thereby eliminated.

RULINGS AND HEARINGS.

Each year there are many problems which arise relative to the application of the law to certain commodities. Where the effect of a ruling of the department is far-reaching enough to justify it, we hold a public hearing on the subject. At these hearings, dealers and manufacturers are invited to express their views in order that the decision of the department may be as consistent with good trade practice as a full protection to the consumer will permit. These hearings have an important bearing on the harmonious working of the decision after it is made.

As the better class of manufacturers, jobbers and vendors of products come to a better understanding of our problems and the laws closer we work in co-operation with the federal authorities in matters of inter-state shipments, the greater protection we can give the purchasers and consumers of our own state, as well as promote the establishment of uniform laws, rules and regulations. I would like at this time to call your attention to the fact that the volume of work done in co-operation with the United States Department of Agriculture has increased at a remarkable rate during the past year. In Iowa alone our state inspectors have taken over seventy-five inter-state samples (principally feeding-stuffs) since the first of the year. Close working co-operation between the federal and state and regulations, of which we have the enforcement, I believe we must all admit our work is lessened. Some members of the trade have been a long time in arriving at the conclusion, that while the food laws were enacted primarily to protect the consumer, they are in fact as helpful to the honest dealer as to the consumer.

Co-operation between the trade and the law-enforcing body has been, and will be, an important factor in this work. I am perfectly free to admit that I never recommended an amendment to an old, or sanction the enactment of new legislation without discussing

with a committee, or others interested, the effect that may be expected. From my contact with the trade during these meetings, I have reached the conclusion that a very large percent of the trade is trustworthy and dependable, and all that they desire is what is right, reasonable and just.

For some time my conclusions have been that there is no calling in life in which we do not find a few men who will, for pecuniary gain, use dishonest methods, or what we might less harshly term, sharp practice. But this is no reason why the better class of men in the trade should not, to a certain extent, be taken into our confidence.

It becomes comparatively easy to enforce a law or regulation where seventy-five, or a greater percent of the trade to be regulated, are perfectly willing to comply.

The very nature of our work qualifies us to know what is best in the way of legislation. We, therefore, invite consultation by the members of the legislature as to the enactment of new, or amendments to old laws, the enforcement of which we have in charge. Our scientific staff is also at the disposal of the members of legislature for the purpose of supplying information of technical nature.

INSPECTORS.

I attribute much of the success of the department to the fact that we have not been hampered by being compelled to take into the service men who are not qualified for their positions by training. The scientific nature and commercial importance of the several lines of work pursued by us makes it necessary that none but men trained in their respective lines be employed. Were we compelled to accept the services of men as a reward for their political activity, much of our work would, necessarily, be slighted or left undone.

As in any other business enterprise, we could not expect men, schooled in another line of work, to make good. Our state recognized the principal that if the head of the department is not qualified to select his assistants, he most certainly is not big enough to get the work out of them after they have been selected by someone else.

Experience in the practical workings of the department has demonstrated that the best service is rendered by a division of the work into three classes.

To carry out the provisions of the dairy law having for its purpose the promotion and extension of dairying, as well as the standardization of dairy products, we must employ for inspectors men who are schooled in dairy science and qualified by experience in the field.

The manufacture of butter is based upon sound scientific principals and only those who are familiar with the art are competent to be of assistance to the creamery in need of help.

To be of service to us the inspectors enforcing the food and sanitary laws must be familiar with commercial channels through which food-stuffs are marketed, must be conversant on the subject of proper methods of handling and storing foods, and must possess sufficient training in sanitary science to secure a practical application of the several laws.

The testing of wagon and track scales is another work calling for special training. To do this work properly and render the scale owner the service he is entitled to for the fee paid, the inspector must be familiar with the construction and installation of scales and should have sufficient training in this line of work to be able to make necessary adjustments. He must be competent to advise scale owners as to what repairs are necessary for defective and worn instruments. Modern weighing devices from the small computing counter scales to the large automatic hopper scales and track scales which weigh a car of grain as the car passes over are complicated mechanism which cannot be "puttered" with by the novice.

From the above statements it may be seen how hopeless the task would be to select eighteen men capable of doing the several lines of work properly.

The state is no more able to employ men who can do successful work in diversified fields than are the large manufacturing concerns who must employ different salesmen to represent them in their different lines.

As a matter of fact it is difficult for this department to secure and retain the services of men who are competent to do the work in the various fields pursued by us. The experience gained by our men qualifies them in a few years for positions at an advance in salary and the state is compelled to compete with commercial concerns for their services.

Our salary limits have remained substantially the same as those in force ten years ago regardless of the fact that the cost of all of the necessities of life have risen. I feel that I cannot maintain the present efficient service unless the salary limits effecting the men of this department are substantially increased.

LICENSE CLAUSES.

The so-called license sections of the laws enforced by this department have now been in effect long enough for us to judge their practical application. I am now obliged to say that the license feature is one of the best and most helpful sections they contain. I believe I am fair when I state that the license clause of our sanitary law has cut down the total number of prosecutions under that law over one hundred percent. Although numerous threats are made to bring about desired improvements, we have not been obliged to revoke more than a dozen licenses a year. The revoking of a license is a "big stick" with which to line up the wilful offender.

Since the sole power of revoking a license is vested in the Commissioner, results can be rapidly obtained and immediate results are possible in drastic cases. You can thus see that the pecuniary gain is not the only advantage to the people and the department of what is often termed the license clause.

This state has been particularly fair in the matter of license fees. They range from $1.00 per year, the fee of a milk dealer's license, to $3.00, the fee for licensing and testing commercial wagon scales. Although the individual license fee is small, the total revenue derived by the state from this source is large. It has increased from $9,593.24 in 1909 to $61,621.76 this year. All license fees collected by this department are paid to the state treasurer.

The following table shows the annual revenue derived from licenses, tax tags, etc., turned over to the state treasurer during the past eight years:

1909	$ 9,593.24
1910	17,435.30
1911	20,892.97
1912	22,049.02
1913	36,504.52
1914	43,842.40
1915	50,244.10
1916	61,621.76

Fines collected under the laws enforced by this department are not included in the above for the reason that these fines were paid into the school fund of the county in which the cases were prosecuted.

County attorneys have reported a total of $3,920.00 in fines collected and turned over to the county treasurer of the state as a result of prosecutions instituted by this department, and rebates to the amount of $3,000.00 have been collected for Iowa purchasers as reimbursement for shortages in food value of concentrated commercial feeding-stuffs delivered from foreign states. Items enumerated above show the total collections of the department to be $68,541.76.

The total salary and expense of the department was $75,240.55.

There being but $7,698.79 more than our receipts paid for the maintenance of the department, shows that the department is practically self-sustaining.

From the above figures we learn that the per capita tax of maintaining the department is less than one-third of a cent. This figure, so far as I am able to determine, is the lowest required by the department of any state for the enforcement of effective pure food, dairy and weight and measure laws.

EDUCATIONAL WORK.

The educational phase of our work has been given considerable attention this year. The rapid increase in price of most of our staple foods has called for greater economy in many homes. It has been our desire to acquaint the housewife with facts pertaining to the nutritive value of the various foods in order that the consumer may be better enabled to meet the demands of the body and purse. To this end we have exhibited at our larger fairs a practical demonstration of the value of our staple food-stuffs. We have also issued news letters from time to time to the public press of this state. These letters go to the agricultural press, to three to four hundred weekly, and a number of daily papers. We find that they give us a way to keep the public well informed on current food subjects. The letters are designed to supply information which will promote more careful buying and assist in the work of the department.

We have supplied a demand for speakers from this department to give talks at Dairy Picnics, Dairy Trains, Farmers' Institutes, Pure Food Shows, Chautauquas and Women's Club meetings. We believe

that a better acquaintance with the laws on the part of the manufacturing and jobbing interests and the consumer is a step forward in food law enforcement. In our talks before women's clubs we never fail to impress upon them the fact that neither the proprietor of an insanitary place, nor the short weight artist can remain in business unless patronized. We strongly urge, as a means of co-operating with this department, the patronizing of clean establishments and honest dealers.

NEEDS OF THE DEPARTMENT.

In my report for the year 1912 I called attention to the need of a new building in which quarters, meeting the requirements of our offices and laboratories would be possible. Since then we have been given some measure of relief by the enlargement, from time to time, of the quarters in the present building.

This department has grown very rapidly. In part this has been due to the placing in our hands additional laws to enforce, but more especially to the increasing importance of Iowa as a food producing and food manufacturing state.

Our present location in an old flat-building is inadequate and not adapted to facilitate the work we now have to do. The chemical laboratories need rearrangement, and new equipment should be provided. Separate rooms are needed for the proper handling of our bacteriological work and a separate room should be provided for the calibration of weights and measures. A fire-proof vault should be built to store the state weight and measure standards; the law covering this matter makes it the duty of the Commissioner to keep these standards in a fire-proof building. The testing of agricultural seeds calls for active work in the early spring, at which time numerous samples are submitted for immediate report. While we have sufficient apparatus to take care of the work, more adequate quarters would permit of an arrangement whereby this would be facilitated.

A steam supply from the central power plant must soon be provided to operate numerous pieces of laboratory apparatus and our electrical wiring should be put in a satisfactory condition; most of the installation is old and of a temporary nature. Ventilating and sewer systems are also inadequate. As our present building cannot be used by us any length of time, I have not wasted money to effect costly changes upon it.

I trust the contemplated office building will be provided for by the next General Assembly and that we may soon have relief from these difficulties and facilities provided in order that we may conduct our work in a more business-like manner.

EGGS.

I make special mention of this subject owing to the important position which this state holds as a producing center of high grade eggs and the necessity of stabilizing the market by an effective inspection system.

The great bulk of our egg crop goes on the market during the months of April, May, June, July and August. During the first three months, due to the cool season, the eggs are of uniform good quality without any special care being exercised by the producer. As the hot weather of July and August appears, the quality of eggs falls rapidly and unless precautions are taken to see that none but sound fresh eggs are marketed, the price paid the farmer falls with equal rapidity. Farmers never did, nor never will, receive pay for the bad eggs they took to market. When buyers find that the eggs marketed in any locality are not good they immediately lower their quotations to compensate them for the loss and expense of handling the bad eggs. They base their price in such a way that the farmers receive compensation for the good eggs only, less the cost of candling, crates and transportation charges incidental to shipping the bad eggs to market. As the cost of crates and transportation is as great for bad eggs as it is for good ones, shippers will generally quit buying when the quality falls very low. Small producers in these localities can then find no good market for their product; if they do find a market they must sell at a price below the cost of production.

Situations similar to the above are prevalent in states which do not maintain a system of inspection which will protect the buyer from deliveries of stale, bad and incubated eggs; the condition prevailed in Iowa prior to 1915.

Early in 1915 and again in this year we instituted vigorous campaigns, the purpose of which was to secure a steady market for Iowa eggs during the months of July and August by preventing the entrance into commercial channels of low grade eggs. The desired result was brought about by prosecuting the wilful offenders and carrying on such educational work as would teach better methods of gathering and marketing.

The result of this work was that during the year 1915 Iowa farmers received an average of one to three cents per dozen more for their eggs than did the farmers of Missouri and Nebraska. In the jobbing trade the Iowa product brought from 75 cents to $1.00 per case more than did shipments from northern Missouri.

Many Missouri shippers soon took advantage of this situation by consigning their eggs to Iowa points for reshipment, thereby securing the high price of the Iowa product. Being unrestrained and interested in price only, these shippers used this method of marketing their low grade eggs and shipments containing rots and spots as well as shipments of good eggs. A demoralization of the Southern Iowa market was threatened. Our inspectors working in co-operation with the federal authorities have this year put a stop to the practice by prosecuting over thirty offenders.

Within the borders of our own state there were thirty-two successful prosecutions for the sale of bad eggs during the month of July and August. The largest consignment effected was shipment of 500 dozen; these being unfit for food were ordered destroyed.

Figures for production of eggs during the year 1916 are not available, but during the year 1915 Iowa farmers marketed 120,930,552 dozens of eggs for which they received $20,593,720, a sum about equivalent to one-tenth the value of the corn crop of the same year.

A conservative estimate of the result of our activities shows that we have secured for the Iowa farmer an increase of $500,000.00 in return for eggs.

WORK OF THE LABORATORY.

Chemical analysis made in the laboratory of the department from November 1, 1915, to November 1, 1916:

Cream and Milk	1,636
Ice Cream	254
Paints and Linseed Oils	56
Miscellaneous Food Products	250
Stock Foods	208
Bacteriological Analyses	661
Samples for Attorney General	247
Samples for County Attorneys	45
Samples for Commission of Pharmacy	24
Samples for Board of Control	2
Agricultural Seeds	1,096
Total	4,479

Samples of milk and cream examined by local state milk inspectors working under the State Dairy and Food Commission:

Boone	395
Burlington	814
Cedar Rapids	2,104
Clinton	756
Council Bluffs	624
Davenport	896
Des Moines	1,060
Dubuque	888
Fort Dodge	606
Iowa City	612
Keokuk	716
Marshalltown	510
Mason City	648
Muscatine	392
Oskaloosa	100
Ottumwa	738
Sioux City	1,764
Waterloo	732
Total	14,356

During the year ending November 1, 1916, our inspectors have inspected a total of 24,852 establishments as follows:

Grocery	4,620
Meat Market	3,144
General Store	3,516
Bakery	888
Slaughter House	156
Restaurant	2,004
Coal Dealer	840
Elevator	1,092
Feed Store	420
Ice Cream Factory	960
Creamery	1,740
Dairymen	648
Farm Dairy	324
Confectionery	936
Wholesale Grocer	156
Seed Dealer	48
Bottling Works	96
Cream Station	1,860
Produce	1,044
Miscellaneous	360
Total	24,852

WEIGHTS AND MEASURES.

During the past year the work of the Weight and Measure department has increased rapidly. Next year it will be necessary to appoint at least one other man for the heavy scale inspection work in order that this work may be given the attention it requires. With the same number of inspectors and charging a smaller fee, the total amount collected during the last fiscal year has increased nearly fifty per cent. Many times during the year it has been practically impossible for the department to take care of the requests for inspections. A majority of scale owners of the state appreciate the inspection service rendered by the department, realizing that if the scale is not weighing accurately they may lose their profit in a very short time or lose their business because of short weights.

The law provides that the department may charge for two inspections each year, but it has not been possible to inspect all of the scales even once each year. We hope, during the coming year, to improve the service in this department. With two weight and measure inspectors giving their entire time to the inspection of heavy scales and using one of the food inspectors in this work a few months, the department has inspected 2,268 "heavy" scales during the fiscal year. Three hundred and ninety-seven scales have been condemned for repairs or junked as unfit for use. Approximately 2,500 small scales have been inspected by the food inspectors, and it is the purpose of the department during the coming year to give a great deal more time to this work. It is also planned to go into the dry goods stores and ascertain the character of measuring devices used in these establishments. The Weight and Measure department covers a wide sphere, nearly every commodity bought and sold in the state being weighed or measured.

In addition to the inspections of scales, it is the duty of the inspectors to check the weights being given. Hundreds of coal deliveries have been re-weighed, and some prosecutions have been necessary. A matter which has required a great deal of attention during the past year is the question of weights on articles sold by the produce and commission men, as, for example, potatoes, onions, apples, and other fruits and vegetables. The law requires that all dry commodities weighing ten ounces or more shall be sold by standard weight or numerical count. Sales of these commodities by the basket, box or hamper are in violation of the statute. The

department is attempting to promote intelligent buying, and if this result is accomplished, consumers must insist upon buying by weight.

Shipments of gasoline and oils have been found in some cases to be short. The department is equipped to promptly determine the weights per gallon of liquids. If samples of liquids are sent to the laboratory together with the exact weight of the commodity, the number of gallons in any weighed quantity may be accurately computed.

Attention of the department has been called to a few dealers who still persist in taking more pounds per bushel of various grains than is allowed by statute, and in the absence of a written agreement to the contrary, the number of pounds provided by statute must be given.

The following sections should be familiar to every citizen of the state:

> "Any person, firm or corporation, who sells, barters, trades or delivers a less weight or amount to a purchaser than that which is asked for or agreed upon, of any article or commodity, shall be deemed guilty of a misdemeanor and shall be punished as herein provided."
>
> "Sec. 3009-p. If any person engaged in the purchase or sale of merchandise or other commodities by weight or measurement or in the employment of labor where the price thereof is to be determined by weight or measurement of the articles or thing upon which such labor is bestowed, be found having in his place of business any inaccurate scales, weights or measures or other apparatus for determining the quantity of any commodity, which do not conform to the standards of weight and measurement of this State, shall be guilty of a misdemeanor and upon conviction shall be punished as provided in this chapter."

The law provides that the department shall, as soon as possible after receiving a request, cause to be inspected any weighing or measuring device which is used to determine the price to be paid for labor in accordance with this statute. The department has made an effort to follow up all requests for inspection of mine scales and others of like character. With the limited number of men in the employ of the department, this has sometimes been difficult. However, very few complaints have reached the department on account of failure to act promptly. This is a matter which

is of very great importance to thousands of employees as well as the employers, and with the additional help it will be possible next year to render even better service.

The department desires to co-operate with citizens in the enforcement of the law in order that we may bring about uniform conditions of buying and selling, make business relations more pleasant for the buyer and seller alike, and promote fair dealing.

FOOD EFFICIENCY.

We hear much in these days about preparedness. A people that is not well fed and nourished cannot to the fullest extent enjoy the blessings of peace or withstand the devastation and horrors of war. Wholesome, well cooked food will without doubt play a greater part and receive more consideration from this time on than ever before. If there is anything in the practical application of the precept that each man must be his brother's keeper, it will apply with double force to a food commissioner and every food inspector in this land.

It was my lot to put in a number of years on the road, depending on hotels and restaurants for my meals. During that time I was too frequently reminded of the old saying that "The Lord furnishes the victuals and the devil the cooks." Our domestic science schools are doing the nation a great work in teaching proper methods of preparing foods for the table. It is my belief that much can also be done in the home. The housewife that cannot properly prepare, cook and serve a meal is not worthy of the name of wife. The mother that does not see that her daughter is schooled and learns the fundamentals of cooking is neglecting an important duty that she owes the daughter, the daughter's husband, if she has one, and the public at large.

Too many meals are eaten simply to satisfy the appetite, not because they are appetizing. If what we eat today is walking around, thinking and talking tomorrow, is it not equally as important to have this food or fuel for the human body properly prepared as it is to have it free from adulteration and of the proper kind?

A locomotive or other engineer would not expect to get good results from the use of an inferior grade of fuel. If a certain kind of coal is known to produce a given quality of steam, this dependable brand would be selected in preference to another having less generative power. For years a study has been made of the human fuel question.

It is well that of late more attention has been paid to the value of the different articles of food in common use. This question has an economic as well as a moral side. It matters little how well we know that 8 cents worth of milk (or one quart) equals approximately 15 cents worth of round steak, or 25 cents worth of eggs, or 75 cents worth of oysters, unless we do what we can to disseminate this knowledge.

For the past five years we have persistently endeavored to better inform the public with the food value of milk. Common with all other foods of animal source, milk is relatively rich in protein. This food constituent, present in milk chiefly in the form of casein, is indispensable for the formation of body tissues and fluids. Although the other food constituents (fat, carbohydrates and ash) are also present in good proportions, it is chiefly as a protein food that milk and milk products find their logical place in the diet; an easily digestible and economical substitute for meat and fish. If the food constituents of milk are compared with those of other animal foods, it will be observed that milk contains more carbohydrates and is free from waste.

Based on its total fuel value, a quart of whole milk contains the same amount of nutritive ingredients as three-fourths of a pound of lean beef steak or one-half of a loaf of bread.

About one-half of the total fuel value of milk is supplied by the fat it contains. In the skimming of milk practically all of this fat but none of the other food constituents is removed. Skim milk, therefore, possesses approximately one-half the food value of whole milk. It may be seen that as a human food skim milk is far from a valueless material. Consumed at the rate of a pint and a half a day, it will furnish practically all of the human body's daily demand for protein.

At moderately active muscular exercise a man must assimilate food containing 4.48 ounces (0.28 pound) of protein and possessing a total fuel value of 3,500 calories, if he is to retain his food bodily vigor. From the following tables, it will be seen that about one-third of this daily demand may be cheaply supplied by relatively small quantities of two of Iowa's leading agricultural products, corn and milk.

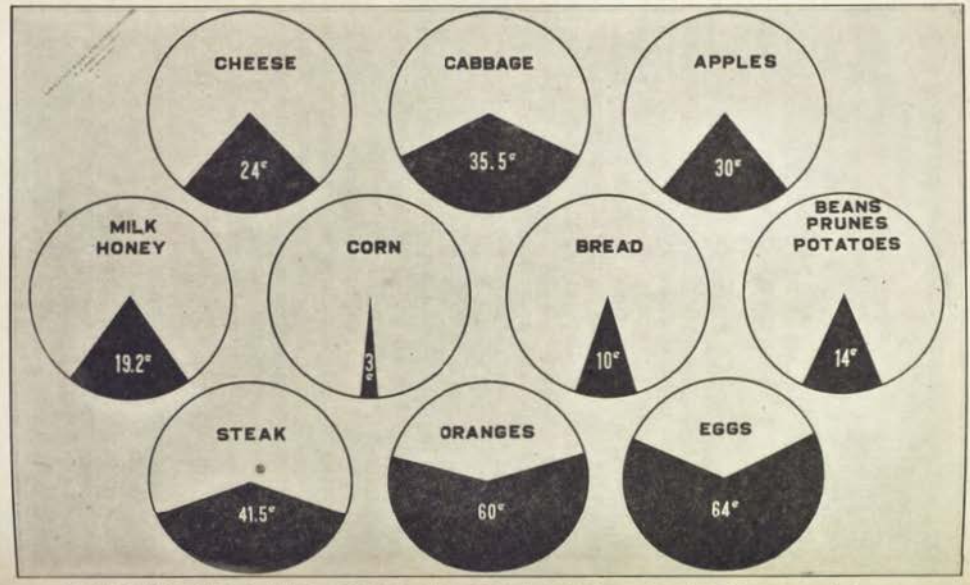

Chart showing part of a dollar required to purchase as much food value as is contained in one pound of corn.

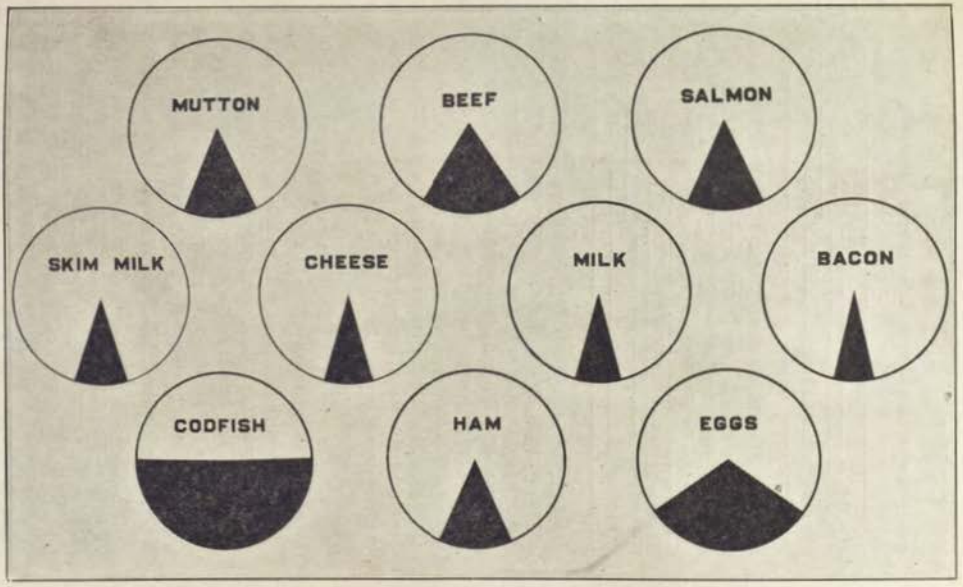

Chart showing the part of a dollar required to purchase as much food value as is contained in one quart of milk.

COMPOSITION AND COST OF A PORTION OF CORN MEAL MUSH AND SKIM MILK.

Food Materials	Amount	Protein	Fuel Value	Cost
Corn Meal	8 oz.	0.74	920	1.1
Skim Milk	1 pt.	0.60	102	2.0
Total		1.34	1,022	3.1

COMPOSITION AND COST OF A PORTION OF CORN MEAL MUSH AND WHOLE MILK.

Food Materials	Amount	Protein	Fuel Value	Cost
Corn Meal	8 oz.	0.74	920	1.1
Whole Milk	1 pt.	.58	330	4.0
Total		1.32	1,150	5.1

I am firmly convinced that when the public becomes fully informed as to the value of our domestic cereals served with milk, either whole or skimmed, they will be served more frequently at the breakfast table; and, if we would have a better and more economically fed people we should endeavor to increase the consumption of milk in the home 100 per cent.

On page 21 of this report we present a graphic illustration showing the relative cost of some of the more commonly purchased foodstuffs of animal origin. In this chart the dark areas show the portion of a dollar required to purchase an amount of the food equal in fuel value to a quart of milk. The values are computed from the average retail prices prevailing in October, 1916.

Aside from the value of milk as a low priced fuel and cheap source of protein, its life-like substances and life-giving properties are as yet little known to the public. Recent studies of milk and milk products have shown why physicians and dieticians are able to get results with milk that are not possible with other foods.

Scientifically these life-like substances are called vitamines. Their presence in milk and butter is very easily demonstrated. Vitamines are not present in vegetable oils, or the common fats used for the manufacture of oleomargarine. Oleomargarines contain the life-like substances only in proportion to the amount of butter they contain. We all know that most of the oleomargarine contains so small a quantity of butter as to be negligible.

MILK INSPECTION

In the inspection of market milk and cream, as well as the inspection of dairies producing and milk plants distributing it, we have continued in our past policy. This contemplates the carrying on (together with the work of law enforcement) of such educational work as is necessary to induce the production of milk and cream of high quality.

There is no inducement to put forth special effort in the production of a better quality of market milk than a proper recognition of a product of merit. To this end we have conducted chemical and bacteriological examinations of the milk sold by the principal dealers of our cities. The results of these examinations have been published from time to time in the local newspapers in order that the consumer may know the quality of milk he is purchasing and select as his milk man the dealer with the best quality.

That the bacterial count of a sample of milk is a just indication of the care and attention under which it is produced and handled is a fact that cannot be disputed. The public appreciates this and the dealer whose published rating is unfavorable is sure to suffer by the loss of patronage. On the other hand, the dealer who puts forth effort to deliver milk which will receive a high rating deserves encouragement and generally gets it, in the form of increased business.

This year we conducted a milk scoring contest at the Dairy Cattle Congress. This contest differs from those previously held in that the dairymen whose milk was examined did not know that samples were being taken. Through the agency of the state milk inspectors located in Iowa cities of 10,000 population and over, we sampled the representative dealers in each of sixteen cities. This milk was expressed to the laboratory for examination and displayed together with its score at the Dairy Cattle Congress. This contest showed the relative quality-standing of the cities and in a measure the comparative efficiency of the work of the local inspectors.

Milk and cream contests in some form have been carried on at many dairy shows since the plan was first put in use at the National Dairy Show at Chicago in 1906. For all of these contests, however, the milk was submitted for the purpose by the dealer or dairyman. Such method of securing samples is not desirable as the sam-

ple submitted is not known to be a representative one of the milk product reaching the consumer. It merely shows what the dealer can do; not what he is doing, will do or expects to do.

From the results we have obtained, we believe that milk contests aid greatly in improving the milk supply. The samples of milk are scored and given a rating for bacteria, flavor and odor, visible dirt, fat, solids, solids not fat, acidity and appearance of the bottle and cap. In fact, every feature which the consumer may expect as regards wholesomeness and food value is considered. A copy of scorecard, together with the method used for assignment of score, may be found in our report for the year 1914.

Local state milk inspectors working under the Dairy Law and directed by this department have examined 14,356 samples of milk and cream secured by them in the course of their regular inspections.

THE DAIRY FIELD.

The past year has been another banner year for the production of dairy products. Our manufactured dairy products—butter, cheese, condensed milk and ice cream—have been marketed at a cash value of over $31,865,228.

Exact figures for the production of market milk, farm dairy butter, skim and butter milk are not available, but a fair estimate of the value of these increases the total value of the products of the dairy cow, exclusive of the value of calves raised, to $105,369,565.

The following table is an itemized statement of the values. Fertilizer is valued at the rate of $15.00 per cow annually; the value of calves is not included.

Creamery Butter	$27,127,228.49
Ice Cream	4,000,000.00
Market Milk	20,940,000.00
Cheese	150,000.00
Farm Dairy Butter	21,648,337.00
Condensed Milk	588,000.00
Skim and Butter Milk	10,050,000.00
Fertilizer	20,865,000.00
Total	$105,369,565.49

There are many causes which have contributed to the increase in production and increase in sale value. Our cow testing associations, many of which were organized a few years ago, are

now demonstrating their value to the milk producing community by eliminating poor cows and placing the production of milk and cream on a sound business foundation.

Building up our poor and average dairy herds by the introduction of pure bred bulls has rejuvenated the interests of many farmers who were not making money out of their herds until heifers of stronger dairy characteristics became producers.

Numerous other agencies such as the work of the Iowa State College, the State Dairy Expert, and various organizations maintained for the purpose of fostering the dairy industry have contributed their share to the educational work necessary to secure for the producer of milk and cream a fair compensation for the effort expended and money invested.

We believe that we are undergoing a period of awakening as to the possibilities of dairy extension. The few herds being dispersed by our retiring older dairymen are eagerly purchased by the younger men at good prices. This demonstrates two facts; namely, that the younger men have sufficient confidence in the possibilities of dairying to enlarge their herds and that the dairy movement will be continued by the younger men where the older leave off.

Apparent at the State Fair this year was the interest in dairying displayed by many of our farmers who had not entered the field. The demonstration made by the cow testing associations was a center of interest. This exhibit has grown from the insignificant display of a few years ago to one of our principal attractions. At the fair was shown also the largest and best display of dairy cattle in the history of the fair. At the Dairy Cattle Congress held at Waterloo a record breaking attendance was made.

At the National Dairy Show, held this year at Springfield, Mass., an Iowa buttermaker took first prize for the best tub of creamery butter. In this contest buttermakers from 23 principal dairy states competed. We are even more proud of our showing of dairy cattle at this exposition. Iowa herdsmen brought back the first prize for the best herd of 12 Holsteins and the best herd of 12 Guernsey cattle shown by any state. We also brought home a large proportion of the prizes given for individual cattle in the various breeds and classes.

The showing for the year as regards the increased production of dairy products would have been even more remarkable were it not for the protracted hot dry season which affected the central and

southern Iowa districts this summer. In these sections production was materially lessened. With the hot dry weather came an increased demand for ice cream, much of the raw material for which had to be secured from the northern section of the state.

Never in the history of the industry has Iowa butter brought so high a price as it did this year. The eastern market which takes about five sixths of our product was uniformly firm. New York quotations averaged for the year 32.43 per pound for extras.

CREAMERY BUTTER.

From reports received from 462 creameries we find that 97,628,788 pounds of creamery butter were manufactured in Iowa last year. This is the highest figure for production recorded during the past eight years. The product brought as returns the sum of $27,127,228.49.

We attribute much of the increase in returns to the marked improvement which is gradually being shown in the quality of butter now being manufactured. Informing the creamery patrons as to better methods of caring for milk and cream is naturely a slower process than teaching better methods of manufacture to the butter maker. As a result our creameries have made more rapid progress due to improved methods of manufacture rather than as a result of securing a better quality of raw product to use. We have confidence, however, in the educational work being carried on with the producers and firmly believe that our creameries will continue to notice a gradually better product being offered to them.

The heavy demand during the summer of the ice cream manufacturers for sweet cream diverted to their use much of the very best raw material for butter making. This situation was felt by the buttermakers during the season.

We find that 462 Iowa creameries secure their raw material from 119,429 patrons who milk 710,714 cows and use 107,853 farm separators. Each of these items shows a marked increase over those of the preceding year; there being an increase of 14 per cent in the number of patrons and an increase of 30 per cent in the number of separators used. There has been an addition of 35,173 cows to Iowa dairy herds devoted to the production of milk and cream for manufacturing butter.

PRICE OF BUTTER.

SHOWING AVERAGE MONTHLY PRICE, IN CENTS AND FRACTIONS THEREOF OF EXTRA CREAMERY BUTTER IN NEW YORK MARKET, THE PAST TWELVE YEARS, EACH YEAR ENDING WITH OCTOBER 1.

Month	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
October	30.50	27.84	26.11	29.10	28.73	30.64	29.96	30.44	31.29	31.46	31.6	28.61
November	24.87	23.38	27.00	27.27	29.57	30.93	31.17	32.95	34.46	33.85	34.79	31.10
December	26.38	24.38	25.64	28.87	31.31	34.00	29.66	30.79	37.37	36.15	33.58	35.09
January	29.18	26.56	30.80	30.60	31.52	33.44	30.39	30.10	35.18	32.60	32.50	32.54
February	27.31	27.69	31.54	29.25	30.06	29.64	30.11	31.14	36.36	29.34	31.21	31.86
March	28.67	27.00	29.80	28.40	29.53	32.65	28.91	30.64	36.77	27.74	29.26	30.96
April	30.68	25.84	30.65	28.15	27.06	31.12	31.11	32.5	34.19	25.40	30.71	30.12
May	28.71	26.11	25.01	32.01	26.29	28.43	31.87	30.43	29.01	26.16	28.86	31.08
June	30.40	30.27	25.06	25.25	25.80	27.06	24.09	27.21	27.81	27.75	28.12	29.42
July	26.56	30.06	24.83	22.43	26.23	28.21	25.10	27.13	27.02	27.04	27.09	28.95
August	25.11	25.75	24.89	22.87	27.19	29.26	26.21	26.61	27.06	30.43	25.96	31.20
September	26.62	24.69	27.81	25.89	30.12	29.86	26.50	29.76	31.17	31.41	26.62	33.88
Av. value per lb. per year	24.30	23.40	27.39	27.60	28.46	30.60	28.69	31.21	32.41	29.97	30.29	32.42

TRADE-MARK BUTTER.

The production of butter under the state trade-mark has made as rapid progress as the exacting provisions of the regulations governing the use of the trade-mark have permitted.

The Executive Committee which has charge of the details of putting the trade-mark in effect has been handicapped by the slow progress made with the United States Patent office in completing the details of registering the mark and the many details of a technical character effecting the labeling of the butter.

These matters have now been satisfactorily settled and the trade-mark is now in use by the Alta Vista Farmer's Creamery Association, Alta Vista; Farmers' Creamery Company, Manly; and the Strawberry Point Farmers' Creamery Association, Strawberry Point.

The unprecedented demand for sweet cream during the past summer prevented some of the other creameries who had applied for the use of the mark from meeting the requirements of the regulations. We expect six to eight additional creameries to qualify for the use of the mark next spring.

The demand on the New York market for Iowa trade-marked butter is far in excess of the supply.

CHEESE.

The decreasing imports of cheese from Europe has caused a marked advance in the price of cheese on the markets of the country. Activities of the past few months indicate that a marked increase in production of Iowa cheese is soon to be expected. Plans are now under way for the installation of some six or eight new cheese factories in the northern part of the state. As none of these factories is ready for operation, estimates as to the results which are to be expected would be of no value. The twelve cheese factories of the state produced 681,315 lbs. of cheese during the year valued at $150,000.00.

CONDENSED MILK.

The factories manufacturing condensed milk of which there are three evaporated 17,298,808 pounds of milk. This amount is but a small portion of the total consumption of evaporated milk in Iowa. In fact the entire output of the condenseries would about supply the amount of evaporated milk used by the manufacturers of ice cream in this state during the past year. This would leave the entire demand of evaporated milk used in hotels, restaurants and the home to be supplied by the factories of other states. It will be seen that the number of condensing plants in the state could be materially increased without causing the manufacturers to go elsewhere for a market.

ICE CREAM.

The manufacturers of ice cream have made rapid progress during the year. The season previous was a very unfavorable one for this important industry, but the past summer afforded seasonable conditions leaving little further to be desired.

The state may feel proud of the rapid progress made by many of our ice cream manufacturers as regards the sanitation of their plants and the improved methods instituted for handling both raw and manufactured products.

Our state statutes several years ago defined ice cream and established for it a minimum fat content. This standard has been earnestly complied with by our Iowa manufacturers and has resulted in a standardization of the ice cream business.

The manufacture of ice cream of uniform quality and of definite food value has secured for it the confidence of the consuming public.

Ice cream has rightly become a staple article of food for summer consumption both as a toothsome edible and as a substitute for the many less digestible dishes served as a noon lunch or as a part of the regular meal. That the public appreciates this situation is attested by the fact that the history of the ice cream industry is one of ever increasing output.

The production for last year was 5,318,100 gallons. This production which is 2,896,613 gallons greater than the previous year shows a per capita consumption of about 2 1-3 gallons.

Since the copy for this report was turned over to the state printer, the United States Supreme Court has decided the case which originated several years ago relative to the state standard for ice cream.

The decision of the court is to the effect that the General Assembly not only has the right to set standards for food products sold in this state, but that the present state standard of a minimum of 12% of milk fat in ice cream is a fair and just standard. We are glad that this matter has been disposed of, as it has occupied considerable time in the courts and has cost the state and the manufacturers who chose to contest the law, considerable money. I believe that at the time the case occupied the attention of the lower courts that the manufacturers believed they were in the right and that the 12% standard was too high. Since that time, however, they have seen the ice cream industry grow as a result of public confidence in a product of so high a quality as that now manufactured in this state. I believe that none of our manufacturers would now welcome a lower standard.

WORK OF THE IOWA STATE DAIRY ASSOCIATION 1916

Although dairying has been an important phase of Iowa agriculture since its beginning, it has never until the past few years received that encouragement which has developed other lines of farming. As a consequence, the Iowa farmer and dairyman have been reluctant to accept improved methods of dairy husbandry.

The creamery interests have made much more rapid progress and today are recognized among the most remunerative factories of Iowa. The education of the buttermakers and creamery managers has received much attention and their efficiency as manufacturers of butter is far in advance of the methods used for the production of the raw product on the average farm. Realizing that there was greater strength in co-operation than there was in individual effort, the Iowa State Dairy Association was organized in 1876. This work as in any other line, needed some definite foundation, and as there was no large market for the raw products the creamery was naturally the first to receive the attention of the organizers.

The association gradually grew and acquired prestige until in 1909 it had a membership of over 600 buttermakers, farmers and dairymen. At that time it was realized that in the effort of advancing the manufacture of butter, there was an important phase of dairying which had, to a great extent, been overlooked, and if the dairy industry of Iowa was to continue to advance, the cow, which is the foundation of dairying and the source of raw material, must be given consideration.

In order to render certain and make rapid this improvement, the officers of the association appealed to the state legislature for assistance. As a result a bill was passed by the 33d General Assembly, authorizing an appropriation to carry on dairy educational work. Since that time the appropriation has been voted by each legislature.

Up to the winter of 1915-16, the educational department had operated fifteen dairy trains. These covered every railroad line in the state and furnished the lecturers an opportunity to reach 701 towns, 210 of which were given two or more meetings due to the crossing of the various lines. These special trains were conducted in a manner to create an interest in dairying and prepared the way for more detailed information in the localities visited.

During the year ending November 1, 1916, representatives of the association met 231 audiences in 66 counties. The records of attendance show that 42,900 people were reached. Of the 231 audiences, 42 were in attendance at farmers' institutes, 46 at dairy and creamery meetings, and the remaining 119 at meetings conducted by the dairy association directly.

A special dairy train was operated over the Illinois Central Railroad lines and every town sufficiently interested to assist in making arrangements was included in the itinerary. The equipment of this train included two baggage cars which were used to carry specimens of the leading dairy breeds and exhibits of dairy products, dairy machinery, charts, diagrams, etc. The special equipment as in previous years was furnished by the railroad to the Association without charge.

Half day or full day meetings were held at each town. In addition to the regular lecture work, community dairy shows, boys' and girls' judging contests, milk record contests, etc., were conducted.

THE COMMUNITY DAIRY SHOWS.

The community dairy shows which were established the previous winter were again conducted at every meeting where satisfactory arrangements could be made to secure the animals necessary for the work.

The business men at each town co-operated in making the show a success and offered attractive cash and merchandise prizes for the best animals exhibited. The dairymen and leading farmers in the communities also gave considerable of their time in encouraging their neighbors to exhibit cattle. All breeds of cattle used for milk production, whether grades or pure breds, were entered, which gave an excellent opportunity for comparison of the various types.

The shows were held in a lumber yard or livery stable which afforded the best place obtainable to stable the animals and furnish

shelter for the audience as well. The programs were opened by leading the best cows into the ring and using them to demonstrate the essential characteristics of good productive dairy type. Questions were then called for and discussions held in which all were invited to participate.

After the cow demonstration was completed, the ring was made larger or when the weather would permit all of the animals were led into the streets, and the judging of the various classes begun. The animals were then placed by the judge with regard to their dairy qualities after which each was gone over carefully and its desirable and undesirable points explained.

The Community Dairy Shows made it possible to reach the man milking a few cows and point out to him by the use of a member of his own herd the difference between the profitable and the unprofitable cow. It was explained to him on his own basis, and he was encouraged to determine further the real value of his herd by weighing and testing the milk. Considerable friendly rivalry was created among the exhibitors which will undoubtedly lead in many instances to better fed and care in the average herd of milk cows.

SCHOOL PROGRAMS AND CONTESTS.

At all the meetings promoted by the Association itself school programs were held. In many instances the rural schools were dismissed and the students attended the assembly meetings which were held in the largest town school house. At these, general lectures on the importance of agricultural training with special reference to dairying were given.

At the completion of the lectures at the high school, the students accompanied by the instructors, were taken to the barn where the cattle for the community dairy shows were kept, and instruction given in judging. The cow demonstration was given first to explain the characteristics of the correct type of dairy cow. Then the boys and girls were supplied with directions and all required to compare the class of animals brought before them. After inspecting the animals for twenty minutes, the students wrote their placing together with the reasons for same on the direction sheet and these were handed to the lecturer in charge. Discussions were then held and all questions answered.

The business men at the various towns gave prizes for the boys and girls who excelled in judging. The students generally were very much interested in the work and expressed a desire to study their agricultural work in school in a similar way. During the winter of 1915-16 nearly 5,000 boys and girls were reached in this manner.

THE MILK RECORD CONTEST.

In order to interest the boys and girls in dairying and to show the real value of the average dairy herd in a practical way, a Milk Record Contest was organized. Any boy or girl between the ages of 12 and 18 years who could weigh and test the milk from three or more cows for three consecutive months was eligible to enter the contest. The contest proper closed in three months, but the contestants were all encouraged to continue the work for at least one year in order to get the entire lactation period of each cow.

A supply of monthly record sheets, feed standards, and pamphlets containing all of the necessary directions for carrying on the work, was furnished to each contestant. They were required to furnish themselves with scales, and wherever possible, with Babcock testers. In case the tester could not be secured, the contestant was required to have the creamery or station man test the samples for butterfat not less than twice a month. At the end of each month, the records were transferred to a summary sheet and the complete data mailed to the office of the association.

The manner of grading the reports was based upon the efforts put forth by the contestants, and not on the production of the cows. In addition to the reports, an essay of not to exceed 500 words describing the manner in which the work was carried on and the benefit derived therefrom was required from each contestant. Any changes which improved the rations or made the production of milk more economical, were recognized, but it was realized that the contestant had no opportunity to select the cows with which he must work.

The following score was used in grading reports:

Accuracy, 25; number of cows, 15; neatness, 20; completeness of details, 20; essay, 20; perfect score, 100.

The breeders of dairy cattle, the publishers of dairy magazines, and the manufacturers of dairy appliances assisted very materially in making the contest a success by offering valuable and practical prizes for furthering the dairy industry.

The results of the contest are gratifying. There were 172 boys and girls who completed the work. Many of these tested more than the required number of cows, while some tested as high as 19 during the entire contest. The reports show that 692 cows produced an average of 501 pounds of milk and 20.5 pounds of butter-fat per month or 16.7 pounds of milk and .68 pounds of fat per day. The average milking period as tabulated on the reports, is eight and one-half months, which makes an average of 4,258 pounds of milk and 174.2 pounds of butterfat per year. The average cost of feed per month was $4.92 per cow. This included dry feed two months and pasture one month. The cost of producing 100 pounds of milk averaged 98 cents and of producing one pound of butterfat 24 cents.

The average price received for butterfat which was sold for the manufacture of butter was 27 cents per pound. This shows a profit of only 3 cents per pound for the butterfat if the skim-milk and manure are allowed to balance the cost of labor, interest and depreciation. The average price received for butterfat used in ice cream making, was thirty-eight cents which shows the advantage in selling sweet cream for this purpose.

Of the 172 herds in the contest, 41 were receiving silage, 36 alfalfa hay, and only 21 a combination of these two feeds. The amount of cottonseed meal, oil meal and bran fed was small and limited to only a few herds. The principal ration used consisted of corn and oats, mixed hay and corn fodder.

The result of the milk record contest show the conditions as found in the average small herd of milk cows in Iowa. They emphasize the importance of getting the farmer, who milks a few cows, interested in his herd. They also indicate the part these herds play in lowering the production of the Iowa cow.

OTHER WORK.

A service department to assist the man just entering the dairy business to locate and purchase foundation animals for his herd was established January 1, 1916. The object of this department is to bring the man who has dairy cattle for sale in contact with the man who wishes to buy. A large number of farmers have taken advantage of this service and many of them have been enabled to purchase the animals they desired at a much smaller expense than if they had attempted to locate the stock themselves. It has been a means of encouraging the purchase of pure bred dairy sires to head herds of the ordinary type in many sections of the state.

During the spring and fall months when the work is urgent on the farm and it is therefore difficult to hold meetings, bulletins are sent to the local newspapers. These contain timely suggestions which assist the farmer in solving the problems which confront him with reference to his dairy herd. They are written with the idea of assisting the creameries in improving the quality and quantity of raw product. The newspapers are lending their assistance by giving the information a prominent place in their columns.

One of the important features of the work has been the establishment of a Dairy Cattle Congress in conjunction with the annual convention. This year the show was unsurpassed by any similar event. It brings dairy cattle breeders with their choice animals from every part of the United States and offers the farmers of not only Iowa, but the Mississippi Valley an opportunity to become acquainted with the various breeds. Premiums are offered for butter, cheese, and milk, which in addition to the display of dairy appliances and farm implements, bring thousands of prosperous farmers. The convention proper is held in a building on the grounds, the subjects of interest to the buttermakers, creamery men and dairymen are discussed by authorities of national reputation.

The Iowa State Dairy Association in all of its work has been assisted in a large measure by the other dairy interests of the State. Chief among these is the Dairy and Food Department which had a number of speakers on the trains throughout the tours and also co-operated in all of the other work. The individual dairymen have also sacrificed portions of their time to educating their brother farmers in better methods of and giving them the benefit of valuable experience. The Dairy Department of Iowa State College and the State Veterinary Department have also given a great deal of assistance from time to time.

WORK OUTLINED FOR 1916 AND 1917.

The State Dairy and Food Commission and the Iowa State Dairy Association have planned a joint campaign to be conducted in Southern Iowa during the coming winter. This section is greatly in need of more dairying because of the condition of the soil and the relatively low income obtained with the present methods employed. The mild climate, the abundance of grass and the adaptability of the soil for growing milk producing feeds make the natural conditions ideal for the economical production of milk. There are

but a few creameries in this portion of the state and therefore the market for dairy products is not as well developed as in the northern portion.

An effort will be made to secure a number of pure bred sires of the different dairy breeds and locate them in various communities. Meetings will be held at the towns and breeders' clubs will be organized. Where sufficient interest is manifested by the farmers a pure bred dairy bull will be given to three or four neighbors for use in their herd. At the expiration of several years the bulls in the different communities will be exchanged and in this way strong healthy herds will be built. It is hoped that this means of actually developing the herd will result in a greater interest in dairying and the increased production of milk and cream in Southern Iowa.

A SIMPLE STEAM STERILIZER FOR FARM DAIRY UTENSILS

The information which follows relative to the manufacture and operation of a simple steam sterilizer for farm and dairy utensils is of sufficient importance to our dairymen and creamerymen to justify publication in this report. This material has been printed in a limited edition by the Bureau of Animal Industry, U. S. Dept. of Agriculture from whom the use of the cuts has been secured.

Cleanliness of dairy utensils is highly essential for the production of a high quality of dairy products, particularly milk and cream. The ordinary process of washing dairy utensils is not sufficient to assure freedom from infection and contamination, therefore sterilization is necessary.

Dairy utensils on small farms are not often efficiently sterilized, because steam is not available. The sterilizers now in use require a small boiler, and the whole sterilizing outfit is often regared as too expensive for use, especially on farms where only a few cows are milked.

The object of this bulletin is to describe a simple and inexpensive yet efficient steam sterilizer which can be provided at a cost of from $5 to $10. It is believed that the sterilizer described here is cheap enough to justify its use on any farm from which milk or cream is sold. The additional keeping quality which the sterilization of utensils will give milk and cream will probably pay for the cost of the sterilizer in one season.

Dirty dairy utensils, and even those which apparently are clean but which have not been sterilized, contain vast numbers of bacteria which are added to milk or cream when it comes into contact with them. These bacteria when introduced into milk begin to grow and produce changes which spoil it. It is true that even when milk is produced under clean conditions it will contain a few bacteria, and when such milk is placed in unsterilized utensils or is run through an unsterilized strainer cloth or separator, large numbers of bacteria are added, which are liable to spoil it quickly.

When dairy utensils are sterilized by steam, all bacteria and disease germs which may be upon them are destroyed and therefore milk and cream when placed in these utensils will keep sweet much longer.

CONSTRUCTION OF THE STERILIZER.

The sterilizer herein described and recommended to the farmer is designed to be of greatest use to those who have one, two or three 10-gallon or smaller cans with a similar number of pails and a strainer cloth. It can be used, however, with a larger number of cans.

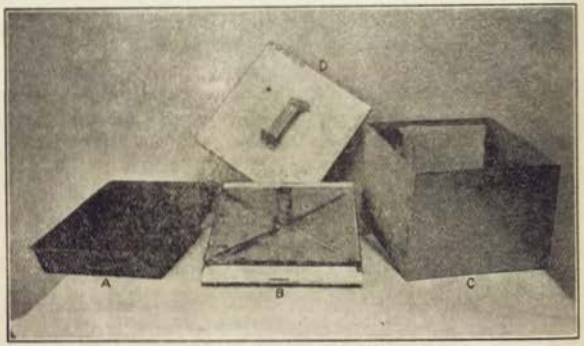

FIG. 1.—Parts of the steam sterilizer. A, roasting pan; B, cover of pan; C, galvanized iron box; D, cover of box.

The sterilizer consists of the parts shown in figure 1. First is a roasting pan (A) of standard size, 20 inches long, 14 inches wide, top measurement, and 3 inches deep. The cover is in three parts; the lower part, fitting closely over the pan, is covered with asbestos, upon which is placed the upper part, the latter being the same width as the pan but 3 inches shorter at each end. It is made as follows: Take a sheet of heavy galvanized iron and cut it large enough to cover the top of the roasting pan, allowing a little to overlap the edge. Solder flanges beneath this cover so that they will meet the edge of the pan, thus making a tight cover. Then cut a hole in the center of the cover 1½ inches in diameter and solder on a round galvanized iron pipe 4½ inches in height and 1½ inches in

diameter. The cover should then be insulated by covering with a piece of asbestos board five-sixteenths of an inch thick; a hole should be cut in the center of this piece to allow the steam outlet pipe to pass through. Then for the upper part make a shallow pan of galvanized iron 14 inches square with sides five-eighths of an inch

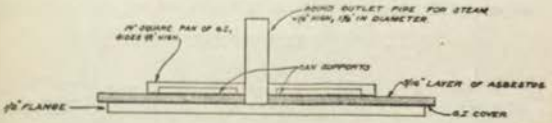

FIG. 2.—Section through cover of roasting pan.

high; cut a hole 1½ inches in diameter and fit the pan on top of the asbestos, allowing the steam outlet pipe to extend through the center hole. When the pan is pressed down closely to the asbestos, solder it to the steam outlet pipe which passes through it. On the pan four strips of stiff galvanized iron three-eighths of an inch wide are soldered. These should extend three-eighths of an inch above the bottom of the pan, as shown in figure 1, and should run from a

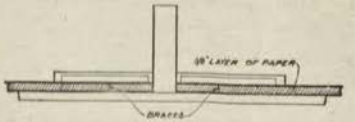

FIG. 3.—Section through galvanized-iron cover, showing paper insulation.

distance of 1 inch from the corners to 1 inch from the steam outlet in the center. A section through the cover (B) is shown in figure 2. In case asbestos can not be obtained, paper may be used instead. Pack papers tightly to a height of three-eighths of an inch over galvanized iron cover with another iron sheet, soldering all edges together to make absolutely tight seams. This will form an insulated cover three-eighths of an inch thick which will replace the asbestos. A cross section through this type of cover is shown in figure 3. The construction is very similar to that shown in figure 2. The rest of the sterilizer, seen in figure 1, consists of a galvanized-iron box (C) with a removable cover (D) which has a handle on the top. This box has no bottom, the 14-inch shallow pan on the asbestos over the cover of the roasting pan forming the base of the box. The

sides should be made separate and should be 11 inches high. These sides should fit tightly into the shallow pan just mentioned. On one side of the box at the top a wire should be attached three-fourths on an inch from the top and one-half inch from the side. This is shown in figure 1, where a strainer cloth may be seen hanging. The cover of the box (D) should be made large enough to extend over the sides and fit closely.

SOURCE OF HEAT.

In the department's test of the outfit described a two-burner wickless kerosene stove was used with excellent results. To get the

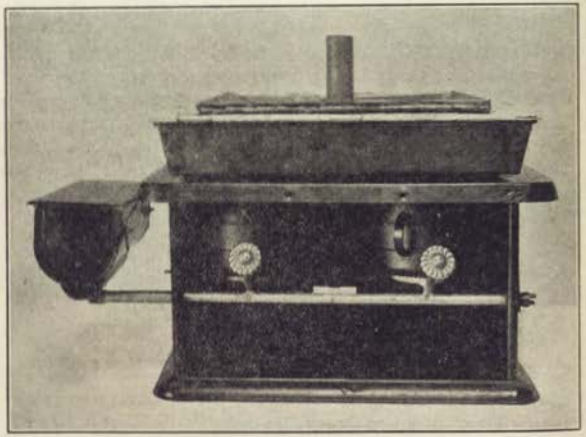

FIG. 4.—Sterilizer in position on oil stove to sterilize cans and pails.

full heating effect, however, it was found necessary to raise the burners until their extreme top was within seven-eighths of an inch from the bottom of the pan, which should rest on the stove grating. This change should be made in case it is found impossible to raise the steam to a temperature of 210° to 211° F., as the best results are obtained with steam at that temperature. The burners can be raised easily at little expense.

The sterilizer, however, may be placed on the kitchen stove or over any other source of heat, such as a gas, gasoline, or laundry

stove which burns either wood or coal. It is necessary, however, to have sufficient heat to furnish steam at the end of the outlet pipe at least 205° F., and 210° to 211° F. should be obtained if possible.

COST OF STERILIZER.

The cost of the sterilizer itself should not be more than $5. The roasting pan varies in price from 25 cents to $1, depending on the

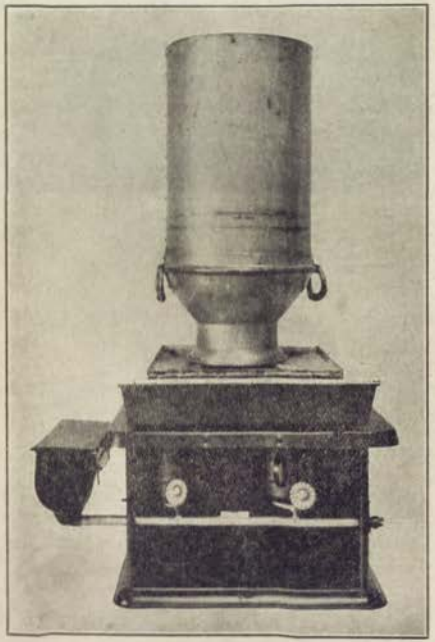

FIG. 5.—Can in position for sterilization.

grade of iron. The galvanized iron, with asbestos and construction work, should not cost more than $4, and the work can be done by any tinner. A two-burner wickless kerosene stove costs from $3.50 to $4.50 but in many cases it will not be necessary to purchase a stove.

METHOD OF OPERATING THE STERILIZER.

TO STERILIZE CANS.

Fill the roasting pan with water to a depth of 1 inch. Fit the cover on the pan and place on a two-burner kerosene stove, as shown in figure 4. As soon as the water heats sufficiently, steam will come from the outlet pipe. The temperature of the steam at its first appearance is about 140° F. Continue the heating until the temperature of the steam at the end of the outlet pipe is at least 205° F.; this should be determined by a thermometer. When the steam has reached this temperature, place the can inverted over the steam outlet, as shown in figure 5, for five minutes, then remove, shake out any water, and place upright on the floor. The can should be absolutely dry in one or two minutes. If not dry in that time it shows that the steam was not 205° F. or above, or that the can had not been washed clean. On account of being so highly heated by the steam the can should dry almost immediately.

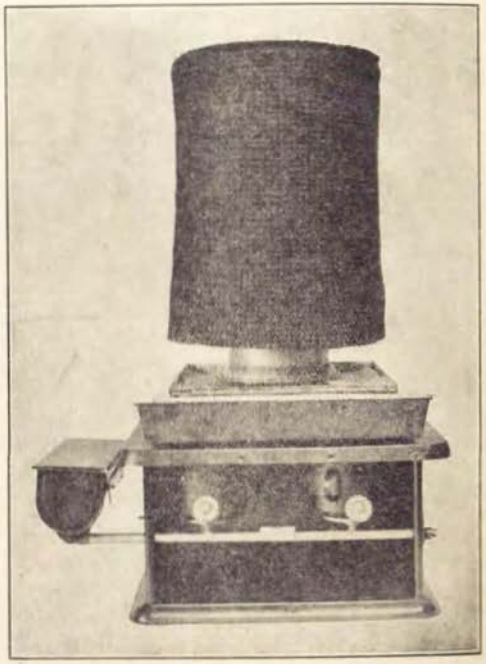

FIG. 6.—A form of insulating cover for cans.

In figure 6 an insulating cover is shown over the can. A similar cover can be made cheaply from a blanket, and its use is urged, especially in cold rooms, since otherwise the can may be cooled so quickly that it will not dry thoroughly.

TO STERILIZE PAILS.

See that the steam is at a temperature of 205° F. or above, then place the pail inverted over the steam outlet, as shown in figure 7.

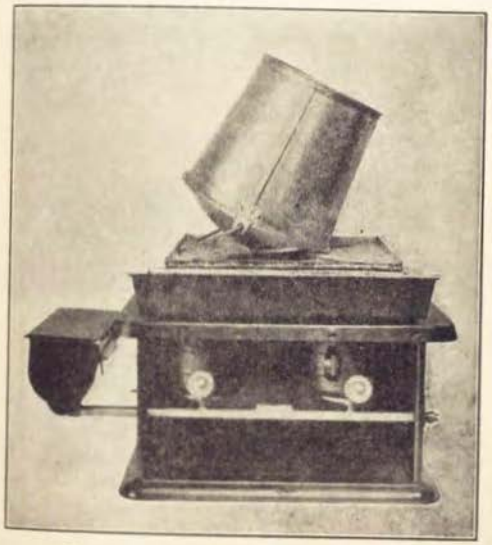

FIG. 7.—Milk pail in position for sterilization.

Allow it to remain five minutes, then remove, shake out the water resulting from the condensed steam, and set upright on the floor.

The pails do not dry so quickly as the cans, but they will be absolutely dry within a few minutes. An insulating woolen cover is also recommended for use in a cold room. After the pails have been steamed and are dry, place them upright in a clean, dry, covered wooden or metal box until milking time.

TO STERILIZE CAN COVERS AND STRAINER CLOTHS.

Use the box shown in figure 1. Before placing it in position, hang the strainer cloth on the wire at top of box, as shown in the figure, having the cloth so folded that one edge may be easily reached without handling the entire cloth. Have the steam at 205° F. or

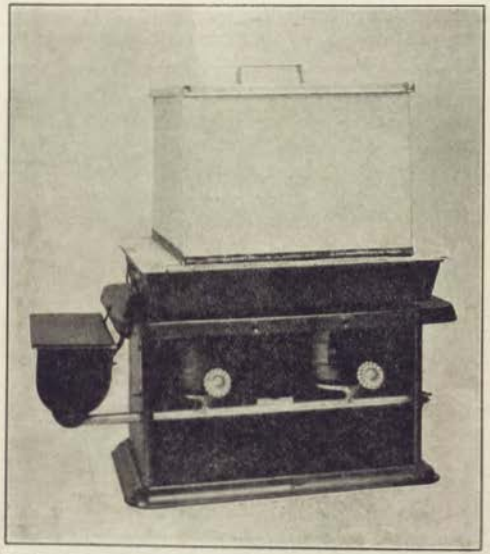

FIG. 8.—Box in position for sterilizing can covers and strainer cloth.

above, and place the box in position as shown in figure 8, leaving the cover off. Set the can covers upright along the sides of the box inside, with the tops of the covers against the sides of the box. As one side is covered by the strainer cloth there is space against

the other three sides, giving room for at least three can covers. Place the cover on the box and steam for five minutes. Then remove the cover and take out the can covers, handling only the top edge. Shake out any water collected in the covers and place them, top down, on a table. It is important to observe this, so that the inside of the cover is uppermost. These covers will dry within two or three minutes, after which they should be placed tightly on the dry cans. Handle only the edge of the cover which remains outside of the can. The strainer cloth should remain hanging in place with the cover on the box until it is to be used at milking time.

TO STERILIZE SEPARATOR PARTS.

The milk-receiving tank of the separator, the same as a milk pail, should be steamed five minutes while inverted over the steam outlet pipe. For other separator parts, use the box the same as for can covers. Wash the parts thoroughly and when the temperature of the steam is 205° F. or above, place the box in position as shown in figure 7. Place the separator parts in the box and put cover on. Allow to remain for five minutes. If the parts are too large for the box, a special case should be constructed. After steaming, keep the tank and separator parts in a clean place free from dust.

COST OF OPERATION.

The cost of operation for the sterilization of two 10-gallon cans, with tops, two pails, and strainer cloth, using kerosene at 10 cents a gallon will be about eight-tenths of a cent. This cost is based on the following figures: Each burner consumes one-half pint of oil an hour, making a total of 1 pint of kerosene, which at 10 cents a gallon amounts to 1¼ cents for fuel per hour. Starting with water at a temperature of 60° F. and with the water 1 inch deep in the roasting pan, about 12 minutes is required to heat the water and generate steam at a temperature of 205° F. Five minutes is then required for each can, the same for each pail, and the same for covers and the strainer cloths. Thus the 2 cans require 10 minutes, the 2 pails the same, and the covers and strainer 5 minutes, making a total of 25 minutes, which added to the 12 minutes required to generate steam, makes a total of 37 minutes for the operation. In this operation no time has been allowed for changing utensils. Two minutes should be sufficient for these changes. To sterilize three cans with covers and strainers would therefore cost about 1 cent. When the sterilizer is used on the kitchen stove the cost should, of course, be very much less, if the stove were already in daily use.

RESULTS OBTAINED BY STERILIZATION.

When properly operated this sterilizer destroys practically all the bacteria in the utensils, including all disease germs which may be present. It will accomplish the same results as any sterilizer in which steam not under pressure is used. Experiments with this sterilizer show that the 5-minute steaming is, for practical purposes, as good as the 15 to 30-minute steaming usually recommended.

POINTS TO REMEMBER.

1. Rinse utensils in cold water, then wash thoroughly with hot water and washing powder. Utensils must be washed clean before sterilization. Sterilization is not a substitute for washing.

2. One inch of water in the roasting pan will furnish steam at a temperature of 211° F. for about 50 minutes. If the sterilizer is operated for a longer period, water should be added to make up for loss by evaporation.

3. The temperature of the steam as it comes from the outlet pipe must be at least 205° F. and preferably 210° to 211° F.

4. Cans, pails, covers and strainer cloths must be steamed for a full 5-minute period. Longer steaming will do no harm, but is not necessary. The 5-minute period must be reckoned from the time the can is placed inverted over the steam outlet, and the steam must be at least 205° F. when the can is placed in position.

5. An accurate thermometer, with a scale reading to 212° F., is necessary to determine the temperature.

6. When a can or pail is placed over the steam outlet its top should rest on the four raised metal supports in order to keep it three-eighths of an inch above the surface of the pan. This is necessary to prevent the water from the condensed steam from sealing the opening below the can or pail. If this space is filled with water, steam will not enter the can.

7. No arrangement is provided for the water from condensed steam to run back into the roasting pan. This can be arranged if found desirable. When only a few utensils are to be sterilized the water can be soaked up with a towel if the quantity has become too great, or the whole cover may be lifted and the water allowed to run off.

8. Some form of insulation is recommended for use over utensils which are being sterilized in a cold room. A blanket easily can be made for this purpose. This is desirable in order to keep the cans or pails hot long enough after the sterilization to dry out quickly.

9. Cans should be dry in one or two minutes after removal when placed upright. If they do not dry within that time, they have not been sufficiently heated or were not washed clean.

10. The drying of dairy utensils after washing and sterilization is extremely important, for bacteria may develop in a moist can.

11. After the utensils are sterilized and dried, they should be placed in a room free form dust and should not be touched until milk is placed in them. Pails after steaming and drying should be placed upright in a clean, dry, covered wooden or metal box, where they should remain until milking time.

12. The sterilizer has been designed with the intent of making it both cheap and simple, to give the desired results. Satisfactory results should follow its use.

13. When using a kerosene or gasoline stove the sterilizing should be done in a room where milk is not handled, as the milk may absorb the odor of the oil.

14. The sterilizer may be used advantageously for separator parts, which should be steamed in the box used for can tops. In case they do not fit, a special metal box should be made.

15. After use, the parts of the sterilizer, especially the roasting pan and cover, should be cleaned and wiped dry, to prevent rusting.

16. The sterilization of dairy utensils is a matter of very great importance, and producers are urged, for their own advantage, to prevent the introduction of vast numbers of bacteria into their milk from unsterilized utensils which may look clean to the eye. Under ordinary circumstances macteria grow rapidly in milk and spoil it, thereby causing losses to the producer and others.

CITY MILK LICENSES.

Table showing the number of milk licenses issued to city milk dealers for each year from 1908 to 1916. In each case the year ends on July 4th.

Year	1908	1909	1910	1911	1912	1913	1914	1915	1916
Number	1,078	1,140	1,106	1,312	1,109	2,099	2,189	2,595	2,729

LOCAL STATE MILK INSPECTORS OF THE STATE OF IOWA.

Cities	Inspectors
Boone	Maurice Healey, M. D.
Burlington	W. F. Schroeder
Cedar Rapids	Phillip Pray
Council Bluffs	F. F. Miller, D. V. S.
Davenport	H. J. High
Des Moines	W. B. Barney, Jr.
Clinton	J. H. Spence, D. V. S.
Dubuque	F. J. Kennedy, D. V. S.
Ft. Dodge	Francis Ludgate, M. D.
Iowa City	C. S. Chase, M. D.
Keokuk	W. P. Sherlock, M. D.
Marshalltown	J. A. Jensen
Mason City	A. L. Wheeler, M. D.
Muscatine	Dr. C. J. Hackett, D. V. S
Ottumwa	B. W. Van Der Veer
Sioux City	W. D. Hayes
Waterloo	N. A. Talty, Ph. C.
Oskaloosa	B. E. Roberts

EXPENSES OF DAIRY AND FOOD COMMISSION FOR THE YEAR ENDING OCTOBER 31, 1916

NAME	SALARY	EXPENSES	TOTAL
W. B. Barney	$ 2,700.00	$ 615.17	$ 3,315.17
B. C. Iliff	1,800.00	68.37	1,868.37
E. L. Redfern	2,400.00	92.44	2,492.44
*J. J. Ross	233.26	156.48	389.84
*R. E. Clemons	1,017.79	725.67	1,743.46
H. W. McElroy	1,400.00	1,073.35	2,473.35
F. W. Stephenson	1,400.00	747.80	2,147.80
*B. A. Brownlee	301.06	303.61	604.67
T. A. Clarke	1,483.33	937.34	2,420.67
G. M. Lambert	1,600.00	1,184.34	2,784.34
O. P. Thompson	1,600.00	1,275.07	2,875.07
*P. W. Crowley	946.68	630.38	1,577.06
H. E. Forrester	1,600.00	988.46	2,588.46
L. L. Flickinger	1,600.00	959.99	2,559.99
L. P. Anderson	1,600.00	1,049.55	2,649.55
*E. C. Lytton	1,500.00	236.02	1,736.02
M. E. Flynn	1,600.00	789.15	2,389.15
J. W. Milnes	1,600.00	857.06	2,457.06
*C. Ottosen	1,333.33	791.01	2,124.33
S. O. Van De Bogart	1,600.00	576.87	2,176.87
J. S. Bittner	1,600.00	751.45	2,351.45
C. S. Bogle	1,600.00	982.61	2,582.61
C. O. Fraser	1,600.00	927.01	2,527.01
A. B. Briggs	1,596.97	1,349.22	2,946.19
E. J. Nolan	1,600.00	1,667.85	3,267.85
Wm. H. Harrison	1,600.00	175.79	1,775.79
G. H. Chittick	1,483.36	192.03	1,675.39
A. W. Day	1,200.00		1,200.00
*R. V. Murphy	450.00		450.00
W. B. Barney, Jr. (extra help)	188.05	319.06	507.11
Margie Garrity	872.50		872.50
*Elma Schnack	450.00		450.00
*Vera Acklin	244.36		244.36
*Addie McQuiston	412.50		412.50
*Olive Wasson	309.68		309.68
*Mrs. Carrie S. Bacon	104.04		104.04
*Iva Waggoner	222.50		222.50
Alberta Abernathy (extra help)	55.00		55.00
Mrs. H. W. McElroy (extra help)	14.52		14.52
J. W. Lytton	780.00		780.00
Laboratory Expense		838.43	838.43
Weight and Measure Expense		1,393.27	1,393.27
Inspection tags		1,579.70	1,579.70
Milk agents' fees		4,084.45	4,084.45
Milk agents' expense		108.77	108.77
Miscellaneous office expense		660.49	660.49
Telephone		116.29	116.29
Telegraph		25.82	25.82
Electricity		41.40	41.40
Drayage		100.24	100.24
Express		168.50	168.50
Total	$45,699.02	$29,541.53	$75,240.55

*Employed less than year.

DEPARTMENT FINANCES.

FEES RECEIVED YEAR ENDING OCTOBER 31, 1916.

Inspection fee tags	$22,990.83
Seed analyses	22.00
Feeding stuffs analyses	54.00
Stock food licenses	1,750.00
Cold storage licenses	375.00
Fertilizer licenses	260.00
Babcock test licenses	6,362.00
Scale tag licenses	4,566.00
Scale inspection fees	8,391.18
Sanitary law licenses	13,791.75
Milk licenses	3,092.00
Butter trade-mark fees	56.50
Total	$61,621.76

CREAMERY BUSINESS OF IOWA.

SHOWING POUNDS OF MILK AND CREAM RECEIVED, POUNDS OF BUTTER MADE AND DISPOSITION OF SAME, SO FAR AS REPORTED.

Counties	No report	Pounds of milk received	Pounds of cream received	Pounds of butter manufactured	Pounds sold to patrons	Pounds sold outside the state	Pounds sold in Iowa
Adair		214,639	1,840,214	735,311	36,319	634,444	64,548
Adams	1		272,600	107,160	7,314	85,515	14,331
Allamakee	8		6,720,014	2,009,294	55,654	1,864,015	179,725
Appanoose	1						
Audubon	8	69,083	2,825,827	1,130,376	72,368	1,016,002	42,006
Benton	6	1,967,187	1,053,036	362,414	12,330	223,110	126,954
Black Hawk	12	23,145,396	2,909,622	1,844,431	144,981	1,246,610	452,840
Boone	3		776,489	295,729	13,274	102,921	179,534
Bremer	24	55,795,848	1,035,355	2,782,790	241,351	2,468,115	132,329
Buchanan	8	14,294,638	7,151,262	1,560,668	111,514	1,294,554	154,600
Buena Vista	6	149,148	2,073,150	689,802	40,331	575,776	73,695
Butler	11	8,844,527	2,906,698	1,370,716	94,931	1,180,827	85,958
Calhoun	4	49,508	1,048,166	488,018	27,126	430,927	29,965
Carroll	8	234,694	1,944,475	814,085	35,945	530,675	248,465
Cass	2		1,472,784	554,909	861	468,596	85,453
Cedar	5		2,764,548	923,540	40,416	592,058	301,066
Cerro Gordo	9	1,117,277	6,896,465	2,062,211	66,947	1,768,486	227,778
Cherokee	1		121,925	37,682	200	33,388	4,294
Chickasaw	11	9,411,541	6,402,779	2,189,043	178,224	1,895,991	114,828
Clarke							
Clay	7	99,500	1,715,776	616,426	46,457	543,470	26,499
Clayton	14	17,929,294	7,728,259	3,006,669	122,077	2,797,962	86,630
Clinton	6	123,500	3,615,427	1,223,469	19,350	1,058,188	145,931
Crawford	1	33,022	131,515	38,132	3,632	32,547	1,953
Dallas	2	155,280	540,700	216,613	7,954	76,209	126,450
Davis							
Decatur							
Delaware	14	18,014,639	7,997,914	2,626,153	180,591	2,151,859	293,703
Des Moines							
Dickinson	4		2,387,707	815,046	17,129	651,913	146,004
Dubuque	14	2,672,082	8,867,518	3,096,572	86,612	2,469,497	540,463
Emmet	3		1,151,963	339,691	22,713	299,120	17,858
Fayette	21	30,733,088	7,905,242	3,503,324	202,304	3,017,529	313,491
Floyd	4	54,751	2,188,749	629,905	58,269	492,359	78,681
Franklin	7	12,293	23,294,064	1,122,076	50,454	968,209	103,313
Fremont							
Greene	2	137,173	394,484	161,796	10,659	92,739	58,398
Grundy	6	658,031	2,515,786	784,554	46,562	726,408	11,584
Guthrie	5	54,367	1,717,511	619,234	22,393	493,579	97,262
Hamilton	5	32,620	984,110	309,916	28,704	244,947	36,265
Hancock	8	69,570	4,105,569	1,205,803	70,512	1,118,646	66,725
Hardin	9	408,748	6,073,461	1,922,976	93,198	1,524,208	196,570
Harrison	1		160,000	43,300	500	40,000	3,000
Henry							
Howard	9	486,328	6,286,828	1,834,414	55,857	1,641,574	136,983
Humboldt	6	198,915	2,389,511	800,833	22,686	723,376	44,771
Ida	1		380,404	97,601	1,000	66,601	30,000
Iowa							
Jackson	8	189,795	4,753,204	1,391,221	88,375	1,152,259	100,587
Jasper	2		750,833	201,267	8,796	129,167	63,404
Jefferson							
Johnson	1		537,206	175,934		115,934	60,000
Jones	8	1,544,677	7,982,504	2,536,340	121,598	2,281,814	132,928
Keokuk	2	42,239	732,283	264,074	2,000	202,074	60,000

CREAMERY BUSINESS OF IOWA—CONTINUED.

Counties	No report	Pounds of milk received	Pounds of cream received	Pounds of butter manufactured	Pounds sold to patrons	Pounds sold outside the state	Pounds sold in Iowa
Kossuth	16	222,481	5,290,724	1,637,583	155,004	1,358,361	144,218
Lee	1	21,730	2,820,468	927,617		899,686	27,931
Linn	7	775,395	6,082,462	2,079,581	61,616	1,731,368	286,597
Louisa							
Lucas	1		192,190	53,040		7,000	46,040
Lyon	3	30,000	2,464,668	722,886	1,623	705,492	15,771
Madison							
Mahaska	1		824,634	159,945		150,945	9,000
Marion	2	77,216	212,106	102,307	6,124	87,491	8,692
Marshall	3	141,474	2,139,799	812,337	26,849	567,290	218,198
Mills	1		169,256	52,314	1,140	21,174	30,000
Mitchell	9	469,811	6,031,307	1,509,907	97,779	1,328,134	84,084
Monona	1		63,177	12,288	403	11,235	650
Monroe	1		238,570	86,880	580	17,300	69,000
Montgomery	1	301,000	394,600	174,115		100,800	73,315
Muscatine	1		319,900	85,852	1,501	66,848	17,503
O'Brien	5	196,642	2,165,986	760,806	34,414	599,119	127,273
Osceola	4	74,178	1,364,562	465,223	10,205	346,419	48,599
Page	1		1,474,199	502,164		321,224	71,940
Palo Alto	11	2,132,360	4,307,629	1,424,297	160,695	1,132,721	110,871
Plymouth	2	250,000	776,078	235,693	5,110	102,574	128,209
Pocahontas	3		664,741	223,089	8,342	180,459	34,288
Polk	4		17,519,464	5,535,717		2,520,109	3,015,608
Pottawattamie	1		4,696,768	1,184,442		982,061	202,381
Poweshiek	2	213,120	1,486,238	479,913	3,220	404,988	71,675
Ringgold	1	11,980	130,339	50,674	310	27,847	22,517
Sac	4		983,573	301,015	15,116	233,228	52,671
Scott	3		2,121,173	595,503	250	309,935	285,318
Shelby	3		444,270	178,158	13,301	162,666	2,191
Sioux	8	504,836	5,961,335	1,999,655	33,908	1,833,784	92,963
Story	8	287,254	2,286,763	810,388	93,194	573,120	144,074
Tama	4		1,637,214	562,595	2,316	430,003	131,282
Taylor	1		3,007,644	791,911	16,200	630,711	55,000
Union	2	432,868	2,963,880	926,208	3,848	864,132	58,228
Van Buren			263,140	98,215	5,000	86,215	8,500
Wapello	3		6,908,925	1,948,551	7,622	1,754,984	185,945
Warren							
Washington							
Wayne	2	20,000	2,391,000	779,829	4,053	705,652	70,124
Webster	4	24,000	1,404,023	502,261	2,700	192,703	306,858
Winnebago	8	2,020,856	4,335,734	1,518,176	131,404	1,303,137	83,615
Winneshiek	9		17,676,432	2,491,475	42,120	2,293,763	154,592
Woodbury	2	2,228,162	21,730,093	12,889,266	1,200	12,360,583	527,483
Worth	8	10,959	4,887,917	1,228,496	78,819	1,087,900	61,717
Wright	5	83,022	1,522,189	478,139	29,425	339,742	108,972
Total	462	199,364,602	399,719,901	97,628,788	3,688,898	81,188,905	12,750,985

HAND SEPARATORS IN IOWA.

SHOWING NUMBER OF CREAMERIES REPORTING USE OF HAND SEPARATORS, NUMBER SO REPORTED, NUMBER OF CREAMERY PATRONS AND NUMBER OF COWS.

Counties	Received cream by rail	Number of creameries reporting hand separators	Hand separators reported	Number of patrons reported	Number of cows reported
Adair	.....	2	782	785	4,650
Adams	.....	1	180	188	840
Allamakee	1	8	1,731	1,750	10,302
Appanoose	.....	.....	.....	.....	.....
Audubon	.....	3	1,178	1,161	7,477
Benton	.....	4	592	639	3,257
Black Hawk	1	9	622	1,923	10,302
Boone	1	3	396	405	2,130
Bremer	.....	7	269	1,841	12,554
Buchanan	.....	5	761	1,708	11,423
Buena Vista	.....	6	1,011	1,096	5,382
Butler	.....	10	1,059	1,495	9,213
Calhoun	.....	4	724	729	3,640
Carroll	1	8	1,234	1,580	9,710
Cass	.....	2	695	702	4,150
Cedar	.....	5	1,586	1,640	7,893
Cerro Gordo	1	8	2,222	2,362	14,021
Cherokee	.....	1	100	100	500
Chickasaw	.....	9	1,651	1,976	17,379
Clarke	.....	.....	.....	.....	.....
Clay	.....	7	613	638	4,240
Clayton	.....	12	1,754	2,213	10,708
Clinton	1	5	1,705	2,065	9,940
Crawford	1	1	60	65	300
Dallas	1	2	250	258	1,400
Davis	.....	.....	.....	.....	.....
Decatur	.....	.....	.....	.....	.....
Delaware	.....	12	1,250	1,695	15,813
Des Moines	.....	.....	.....	.....	.....
Dickinson	1	4	1,220	1,239	7,240
Dubuque	3	14	2,999	3,163	22,361
Emmet	.....	5	321	321	2,150
Fayette	.....	15	1,928	2,917	21,821
Floyd	.....	4	715	727	5,170
Franklin	.....	5	1,001	1,232	7,790
Fremont	.....	.....	.....	.....	.....
Greene	1	2	300	303	1,250
Grundy	.....	5	283	296	5,154
Guthrie	.....	5	659	706	3,807
Hamilton	.....	5	541	613	3,220
Hancock	1	7	1,158	1,158	9,471
Hardin	1	9	2,046	2,178	13,152
Harrison	.....	1	60	62	250
Henry	.....	.....	.....	.....	.....
Howard	.....	9	1,328	1,627	5,915
Humboldt	1	6	1,021	1,037	7,100
Ida	.....	1	225	225	900
Iowa	.....	6	552	545	3,131
Jackson	1	8	1,206	1,669	12,277
Jasper	.....	2	300	300	1,800
Jefferson	.....	.....	.....	.....	.....
Johnson	1	1	250	250	1,200
Jones	.....	7	1,848	2,017	17,415

HAND SEPARATORS IN IOWA—CONTINUED.

Counties	Received cream by rail	Number of creameries reporting hand separators	Hand separators reported	Number of patrons reported	Number of cows reported
Keokuk	2	1	90	350	1,800
Kossuth	.....	15	1,437	1,420	11,081
Lee	.....	1	1,000	1,025	7,200
Linn	1	7	3,749	3,888	17,102
Louisa	.....	.....	.....	.....	.....
Lucas	1	1	80	80	400
Lyon	1	2	1,053	1,093	8,707
Madison	.....	.....	.....	.....	.....
Mahaska	.....	1	250	200	1,350
Marion	.....	1	150	467	1,030
Marshall	.....	3	840	878	5,210
Mills	.....	1	95	100	470
Mitchell	.....	8	1,182	1,582	10,730
Monona	.....	1	20	20	120
Monroe	.....	1	140	140	720
Montgomery	.....	1	175	180	1,050
Muscatine	.....	1	125	171	810
O'Brien	.....	5	916	922	5,650
Osceola	.....	3	350	357	1,543
Page	1	1	1,450	1,500	4,800
Palo Alto	.....	9	1,045	1,242	8,302
Plymouth	1	2	350	356	1,800
Pocahontas	.....	2	445	445	1,880
Polk	4	4	9,000	9,150	45,883
Pottawattamie	1	1	2,500	2,500	7,500
Poweshiek	1	2	812	862	1,200
Ringgold	.....	1	60	68	256
Sac	1	4	520	505	2,625
Scott	2	2	980	1,040	5,200
Shelby	.....	2	229	229	1,195
Sioux	.....	8	2,119	2,139	12,313
Story	.....	8	1,026	1,026	9,203
Tama	2	1	70	600	2,500
Taylor	.....	1	1,500	1,615	5,280
Union	1	3	1,618	1,725	9,340
Van Buren	.....	1	175	175	800
Wapello	.....	1	2,180	2,205	18,500
Warren	.....	.....	.....	.....	.....
Washington	.....	.....	.....	.....	.....
Wayne	.....	.....	.....	.....	.....
Webster	1	2	770	950	6,775
Winnebago	1	4	770	802	4,295
Winneshiek	.....	8	1,329	1,401	10,502
Woodbury	.....	9	1,970	2,171	17,370
Worth	3	3	17,950	18,480	101,220
Wright	.....	8	993	1,018	8,788
	.....	5	597	604	4,752
Total	43	407	107,853	119,428	710,714

CHEESE FACTORY LIST.

*Central churning plant; c Co-operative; s Stock; i Individual.

Number	Name of Factory	Located at or Near	Name of Proprietor, Secretary or Manager	P. O. Address of Proprietor Secretary or Manager	Name of Cheesemaker	P. O. Address of Cheesemaker
	Adams County—					
1	Nodaway Cheese Factory....i	Nodaway	F. M. Eastlack	Nodaway	F. M. Eastlack	Nodaway
	Allamakee County—					
2	Rossville Cheese Factory....i	Rossville (2½ mi. s)	E. R. Kelly	Monona R. 2	M. W. Winger	Monona R. 2
3	Hanover Cheese Factory....i	Rossville (13 mi. se Waukon)	D. J. Murphy	Waukon	Otto Steinhart	Dorchester
	Bremer County—					
4	Janesville Cheese Factory....s	Janesville	Geo. V. Fowler	Waterloo	Chas. Bye	Janesville
	Cass County—					
5	Lewis Cheese Factory....i	Lewis	M. E. Delean	Lewis	John H. Jaberg	Lewis
	Chickasaw County—					
6	Ionia Cheese Factory....i	Ionia	L. Rosaoer	N. Hampton	John Lord	Ionia
	Crawford County—					
7	Manilla Cheese Co....i	Manilla	J. C. Dyson	Manilla	Henry Eggleson	Manilla
	Howard County—					
8	Jamestown Cheese Factory....i	Riceville (3 mi. e)	John Egger	Riceville	John Egger	Riceville
	Humboldt County—					
9	Pioneer Cheese Factory....s	Renwick	Badger Cheese Co.	Monroe, Wis.	Will Keller	Renwick
10	Elmer Cheese Factory....s	Renwick	Badger Cheese Co.	Monroe, Wis.	Albert Keller	Renwick
	Muscatine County—					
11	Muscatine French Cheese Co....s	Wilton Junction	P. A. Schmidt	Wilton Jct.	P. A. Schmidt	Wilton Jct.
	Taylor County—					
12	Sharpsburg Cheese Factory....i	Sharpsburg	F. M. Eastlack	Nodaway	F. M. Eastlack, Jr.	Sharpsburg
	Washington County—					
13	Dublin Cheese Factory....i	Dublin	J. S. Mangold	Washington R. 5	J. S. Mangold	Washington

CONDENSED MILK FACTORIES.

Number	Name of Creamery	Located at or Near	Name of Proprietor, Secretary or Manager	P. O. Address of Proprietor Secretary or Manager		P. O. Address of Buttermaker
	Bremer County—					
1	Mohawk Condensed Milk Co....s	Waverly	Frank Gibbie, Pres	1288 Granite Bldg Rochester, N. Y.	W. E. Bock, Mgr.	Waverly
	Dallas County—					
2	Perry Packing Co....s	Perry	Tom Walpole, Secy.	3617 Howard St. Omaha, Nebr.		
	Washington County—					
3	Hawkeye Cond. Milk Co....i	Brighton	T. Thompson	Brighton		

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 Buttermaker
	Adair County—					
1	Adair Co-op. Cry. Co....c	Adair	D. J. Cowden	Adair	J. T. Ryan	Adair
2	Greenfield Cry. Co....c	Greenfield	Jas. F. Laude	Greenfield	Chris Lundboy	Greenfield
	Adams County—					
3	Far. Mut. Co-op. Cry. Assn....c	Prescott	O. M. Green	Prescott	A. H. Ady	Prescott
	Allamakee County—					
4	New Albin Co-op. Cry....c	New Albin	R. G. May	New Albin	F. Rice	New Albin
5	Far. Waukon Cry. Co....c	Waukon	H. E. Thompson	Waukon	Albert H. Hanemeier	Waukon
6	Arctic Spring Cry. Assn....c	Quandahl (7 mi. s.)	O. C. Flatberg	Spring Grove, Minn.	O. Goodno	Spring Grove, Minn.
7	Ludlow Co-op. Cry. Co....c	Waukon (8 mi. sw.)	Ben Ludeking	Waukon R. 1	W. P. Muth	Waukon R. 1
8	Far. Co-op. Cry. Co....c	Waterville	Fred Mortensen	Waterville	J. O. Johnson	Waterville
9	Postville Far. Co-op. Cry. Co....c	Postville	Geo. W. Fay	Postville	B. F. Schultz	Postville
10	Calhoun Cry. Co....c	Lansing (7 mi. sw.)	C. J. Riser	Church	K. V. Perris	Church

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
	Appanoose County—					
12	Strickler Creamery Co.....i	Centerville	O. M. Strickler.....	Centerville	.....	.....
	Audubon County—					
13	Liberty Cry. Co.....c	Manning (9 mi. s.).....	Jas. Wittrup.....	Manning	Jens Gertsen.....	Manning
14	Danish Sep. Cry. Co.....c	Kimballton	Jorgen Marcussen....	Audubon R. 4....	Peter Thuesen.....	Kimballton
15	Blue Grass Cry. Co.....c	Hamlin	John Slayton.....	Exira R. 5.....	M. Nielson.....	Hamlin
16	Exira Cry. Company.....c	Exira	Anthony Kommes....	Exira	C. B. Petersen.....	Exira
17	W. Hamlin Sep. Cry. Co.....c	Exira	Martin Nelson.....	Exira R. 2.....	Carl Lynge.....	Exira R. 2
18	Audubon Twp. Cry. Co.....c	Exira (6 mi. e.).....	L. P. Nelsen.....	Exira	L. P. Nelsen.....	Exira
19	Oakfield Twp. Sep. Co.....c	Brayton (3½ mi. w)....	Christian Hansen....	Brayton R. 1.....	M. Andersen.....	Atlantic R. 6
20	Sharon Sep. Cry. Co.....c	Audubon (6 mi. sw.)....	N. C. Molgaard.....	Audubon R. 4....	P. Windfeldt.....	Audubon R. 4
	Benton County—					
21	Norway Creamery i	Norway	J. W. Derflinger....	386 S. 16th St., Cedar Rapids..	Geo. Phillips.....	Norway
22	Far. Cry. Co.....a	Belle Plaine	C. A. Sweet.....	Belle Plaine	.....	Belle Plaine
23	Model Creamery i	Newhall	Gardemann & Jungclaus	Newhall	Clay Lego.....	Newhall
24	Vinton Cry. Co.....i	Vinton	Hammon Bros.....	Vinton	H. E. Hammon.....	Vinton
25	Urbana Quality Creamery.....i	Urbana	A. B. Cramer.....	Urbana	J. G. Nichols.....	Urbana
	Black Hawk County—					
26	Benson Dairy Co.....c	Benson	J. R. Dumond.....	Cedar Falls	J. F. Lorenzen.....	Cedar Falls
27	Cedar Falls Cry.....i	Cedar Falls	Riedel & Jensen....	Cedar Falls	L. H. Olson.....	Cedar Falls
28	Orange Cry. Co.....c	Waterloo (5 mi. s.).....	C. Bechtelheimer....	Waterloo R. 1, Bx. 23.....	R. W. Chadwick.....	Waterloo R. 1
29	Co-op. Cry. of Jubilee.....c	Jesup (7 mi. sw.).....	A. J. Widdel.....	Jesup	A. J. Widdel.....	Jesup
30	Mt. Vernon Cry. Co.....c	Boies (1½ mi. w).....	Geo. H. Moeller....	Denver	Ernst Rohrsen.....	Cedar Falls
31	Hudson Co-op. Cry. Assn.....c	Hudson	A. H. Brandhorst....	Hudson	W. McFarlane.....	Hudson
32	Union Cry. Co.....c	Fischford	G. A. Evenson.....	Janesville R. 2...	Wm. Dilley.....	Janesville
33	East Lester Cry. Co.....c	Fairbank (4½ mi. sw.)..	Ira Finch.....	Fairbank	W. P. Hughs.....	Fairbank
34	Far. Cry. Co.....c	Dunkerton	G. S. Kleckner.....	Dunkerton	.....	Dunkerton
35	Crain Creek Cry. Co.....i	Denver (6 mi. se.).....	Wm. Meier.....	Denver R. 1.....	Wm. Meier.....	Denver
	Boone County—					
36	Flynn Dairy Co.....a	Madrid	G. S. Brewer.....	Des Moines.....	Nels Hansen.....	Madrid
37	Boone Cry. Co.....i	Boone	P. J. Saverald.....	Boone	C. F. Fortine.....	Boone
38	Rosendale Co-op. Cry. Co.....c	Boone (6 mi. w.).....	L. C. Peterson.....	Story City R. 4.	L. C. Peterson.....	Story City

	Bremer County—					Fairbank
39	Knittel Cry. Co.....c	Readlyn (3½ mi. nw.)....	J. Strottmann.....	Readlyn R. 1.....	F. H. Wehling.....	Winthrop
40	Fremont Cry. Co.....c	Tripoli (3½ mi. se.).....	J. P. Snelling.....	Tripoli	H. C. Koeneke.....	
41	Ladage & Mellinger.....i	Plainfield	H. C. Ladage.....	Plainfield	.....	
42	Dayton Creamery Co.....c	Sumner (4 mi. s).....	F. E. Hatch.....	Sumner R. 7.....	C. W. Zell.....	Alta
43	Janesville Cry. Assn.....c	Janesville	H. W. Stine.....	Cedar Falls.....	B. O. Squires.....	Linn Grove
44	Readlyn Co-op. Cry. Co.....c	Readlyn	H. A. Griese.....	Readlyn	H. A. Griese.....	Newell
45	Spring Fountain Cry. Co.....c	Sumner (3 mi. sw.).....	Wm. Zell.....	Sumner	F. W. Bremer.....	Sioux Rapids
46	Denver Cry. Co.....c	Denver	H. C. Pipho.....	Denver	A. Mooney.....	Albert City
47	Grove Hill Cry. Co.....c	Fairbank	Ed. Kerns.....	Fairbank R. 3, Bx. 89.....	E. C. Kanrose.....	Storm Lake
48	Seigel Cry. Co.....c	Tripoli (6 mi. nw.).....	Ang. Winzenburg.....	Waverly R. 6....	F. H. Harms.....	
49	Washington Co-op. Cry. Co.....c	Waverly (3 mi. e.).....	J. D. Meglaghan.....	Waverly R. 5....	Fred Wills.....	Clarksville
50	Artesian Cry. Co.....c	Denver (4 mi. n.).....	C. C. Traetow.....	Waverly R. 2....	C. J. Meier.....	
51	Tripoli Cry. Co.....c	Tripoli	B. B. Bennett.....	Tripoli	Wm. Ambrose.....	New Hartford
52	Potters Siding Co.....c	Tripoli	L. C. Barry.....	Tripoli R. 2.....	E. M. Gulney.....	
53	Sumner Cry. Co.....c	Sumner	S. A. Munger.....	Sumner	E. B. Olds.....	Readlyn
54	Excelsior Cry. Co.....c	Sumner (6 mi. nw.).....	Geo. Rockdashel.....	Sumner	Wm. Mittlestadt.....	Tripoli
55	Climax Cry. Co.....c	Sumner (6½ mi. sw.).....	H. W. Schnadt.....	Sumner	J. L. Zbornik.....	Plainfield
56	Klinger Cry. Co.....i	Readlyn 3 mi. s.).....	C. H. Rohrssen.....	Fairbank R. 2....	C. H. Rohrssen.....	Sumner
57	Frederika Cry. Assn.....c	Frederika	J. H. McDonald.....	Frederika	John Ambrose.....	Janesville
58	1st Maxfield Cry. Co.....c	Denver (2 mi. e.).....	H. C. Griese.....	Denver R. 7.....	Henry Piegors.....	Readlyn
59	Little Valley Cry. Co.....c	Sumner (8 mi. s.).....	Chas. Krueger.....	Sumner R. 7.....	G. O. Miller.....	Sumner
60	Western Douglas Cry. Co.....c	Bremer (6 mi. nw.).....	Carl Oberben	Plainfield R. 1...	Ernest Hasse.....	Denver
61	Bremer Cry. Co.....c	Bremer	F. W. Nolte.....	Waverly R. 2....	J. W. Wedemeier...	Fairbank R. 3
	Buchanan County—					Waverly R. 2
62	Wapsie Valley Cry. Co.....a	Independence	C. V. Rosenberger...	Independence	W. D. Wenthe.....	Waverly R. 5
63	Aurora Creamery i	Aurora	E. H. Flickinger....	Aurora	E. H. Flickinger...	Waverly R. 5
64	Lamont Cry. Assn.....c	Lamont	O. C. Gladwin.....	Lamont	E. A. Cole.....	Tripoli
65	Jesup Cry. Co.....c	Jesup	C. L. Bright.....	Jesup	M. E. McMurray...	Tripoli, R 2
66	Far. Co-op. Cry. Co.....c	Hazleton	J. W. Basham.....	Hazleton	Matt McDowall.....	Sumner
67	Fairbank Far. Cry. Co.....c	Fairbank	A. J. Langley.....	Fairbank	C. E. Brant.....	Sumner
68	Winthrop Cry. Co.....i	Winthrop	E. C. Capper.....	Winthrop	W. F. Sharp.....	Sumner
	Buena Vista County—					Fairbank, R 3
69	Far. Co-op. Cry. Co.....c	Alta	A. M. Acker.....	Alta Box 71.....	A. M. Acker.....	Frederika
70	Linn Grove Creamery.....i	Linn Grove	Peterson & Jensen..	Linn Grove	Peter Petersen.....	Denver, R 7
71	Far. Cry. & Pro. Co.....c	Newell	J. C. Arse.....	Newell	N. C. Olson.....	Sumner, R 7
72	Sioux Rapids Creamery.....i	Sioux Rapids	P. R. Ballantyne....	Sioux Rapids.....	Rust Williams.....	Waverly, R 1
73	Far. Creamery Co.....i	Albert City	W. W. Kischer.....	Albert City.....	Earl Post.....	Waverly, R 2
74	Plain View Creamery Co.....i	Storm Lake	L. W. McCreery, J. M. Hussey	Storm Lake.....	L. W. McCreery....	Independence
	Butler County—					Aurora
75	Clarksville Cry Co.....i	Clarksville	M. J. Johnson.....	Clarksville	M. A. Jones.....	Lamont
76	N. Hartford Far. Mutual Co-op. Creamery Co. c	New Hartford	R. L. Farnsworth..	New Hartford....	P. W. Peterson....	Jesup
						Hazleton

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
77	Albion Co-op. Cry. Co. c	Parkersburg (8 mi. ne.)	E. F. Perrin	Parkersburg	Harry Chapman	Parkersburg
78	Craner Creamery Co. i	Coster	W. A. Craner	Shell Rock R. 2	P. C. Daniels	Shell Rock, R 2
79	Shell Rock Cry. Co. s	Shell Rock	D. C. Austin	Shell Rock	F. D. Daniels	Shell Rock
80	Beaver Co-op Assn. c	Hartford (3 mi. sw.)	W. H. Chapman	N. Hartford	W. H. Chapman	N. Hartford
	Butler County—					
81	Far. Co-op. Cry. Co. c	Allison	Geo. W. Barsty	Allison	R. D. Sweet	Allison
82	Far. Co-op. Cry. Co. c	Greene	A. S. Shook	Greene	J. Jacobsen	Greene
83	White Rose Cry. i	Austinville	S. L. Patterson	Austinville	P. F. Anderson	Austinville
84	Dumont Creamery i	Dumont	J. A. McAdams	Dumont	R. O. Reed	Dumont
85	Community Creamery i	Parkersburg	C. J. Bubde	Parkersburg	C. Muller	Parkersburg
	Calhoun County—					
86	Cedar Creek Cry. Co. i	Somers	S. P. Petersen	Somers	S. P. Petersen	Somers
87	Pomeroy Cry. Co. i	Pomeroy	H. A. Albrecht	Pomeroy R. 1	Geo. F. Allard	Pomeroy
88	Moon Bros. Creamery i	Manson	Harry A. Moon	Manson	Chas. G. Moon	Manson
89	A. Baird & Co. s	Lohrville	Hugh Baird	Lohrville	John J. Stamen	Lohrville
	Carroll County—					
90	Dedham Creamery Co. i	Dedham	H. Laurikson	Dedham	Carl Andersen	Dedham
91	Halbur Creamery Co. i	Halbur	M. J. Wagner	Halbur	M. J. Wagner	Halbur
92	Templeton Cry. Co. c	Templeton	John Bleri	Templeton	Frank J. Domayer	Templeton
93	Rose Valley Cry. Co. i	Roselle	C. Kohorst	Carroll R. 4	C. Kohorst	Carroll
94	Manning Cry. Co. s	Manning	H. A. Swegar	Manning	Roy Wohlenhauser	Manning
95	Far. Co-op. Cry. Co. c	Breda	A. J. Poking	Breda	H. E. Fowler	Breda
96	Selzer Pure Food Pro. Co. s	Carroll	John Selzer	Carroll	Harry Brodkin	Carroll
97	Jensen's Creamery i	Coon Rapids	Jens Jensen	Coon Rapids	Julius Suhr	Coon Rapids
	Cass County—					
98	Atlantic Prod. Co. s	Atlantic	E. J. Evans	Atlantic	Wm. Haenke	Atlantic
99	Far. Creamery Co. c	Cumberland	J. E. Norris	Cumberland	J. Johansen	Cumberland
	Cedar County—					
100	Golden Star Cry. Co. i	Bennett	W. H. Kroeger	Bennett	W. H. Kroeger	Bennett
101	Tipton Creamery Co. i	Tipton	A. J. Barth	Cedar Rapids	C. C. McCue	Tipton

102	Lowden Far. Mut. Co-op. Creamery Association c	Lowden	Kozuth Paule	Lowden	W. L. Sloan	Lowden
103	Massillon Co-op. Cry. Co. c	Massillon	P. H. Schneider	Massillon	Peter White	Massillon
104	West Branch Cry. i	West Branch	W. C. Phelps	West Branch	W. H. Graham	Iowa City
	Cerro Gordo County—					
106	Sunnyside Cry. Co. i	Thornton	J. C. Mortensen	Thornton	H. P. Christensen	Thornton
107	Ventura Far. Cry. Co. c	Ventura	J. E. Sawyer	Clear Lake	E. L. Forestir	Ventura
108	Rockwell Co-op. Cry. Co. c	Rockwell	F. C. Siegfried	Rockwell	Fred D. Ford	Rockwell
109	Plymouth Co-op. Cry. Co. c	Plymouth	N. F. Ward	Plymouth	C. N. Hart	Plymouth
110	Far. Mut. Co-op. Cry. Co. c	Clear Lake	H. E. Palmeter	Clear Lake	Guy Thomas	Clear Lake
111	E. B. Higley Co. s	Mason City	C. O'Keefe	Mason City	Emil Swanson	Mason City
112	Dougherty Co-op. Cry. Co. c	Dougherty	R. H. Fonts	Dougherty	R. H. Fonts	Dougherty
	Cherokee County—					
113	Cherokee Cry. & Bottling Works i	Cherokee	Goeb Bros.	Cherokee	L. Lowell	Cherokee
	Chickasaw County—					
114	Sande Creamery Assn. c	Sande (12 mi. n.)	H. O. Natvig	Cresco	J. F. Mogle	Lawler
115	Jerico Cry. Assn. c	Jerico	T. W. Munson	New Hampton	J. P. Kelly	N. Hampton
116	Far. Co-op. Cry. Assn. c	Nashua	E. E. Tracy	Nashua	Hugh Dulls	Nashua
117	The N. Hampton Far. Cry. Assn. c	New Hampton	J. W. Krieger	New Hampton	D. W. Mohler	New Hampton
118	Lawler Cry. Assn. s	Lawler	F. J. Murphy	Lawler	Alton Brannon	Lawler
119	Ionia Far. Cry. Assn. c	Ionia	W. J. Heinmiller	Ionia	T. W. Stikeman	Ionia
120	Fredericksburg Butter Factory. c	Fredericksburg	C. L. Whitcomb	Fredericksburg	Chris Russler	Fredericksburg
121	Alta Vista Far. Cry. Assn. c	Alta Vista	Albert Tietjen	Alta Vista	R. Jorgenson	Alta Vista
122	Williamstown Cry. Assn. c	N. Hampton (6½ mi. s.)	C. M. Burmaster	Fredericksburg R. 3	Roy Scoles	N. Hampton
123	Deerfield Creamery i	Colwell (5 mi. e.)	Johnstone & Hallantyne	Bassett	Chas. Zierath	Bassett
	Clay County—					
124	Langdon Mutual Cry. Assn. c	Langdon	V. H. Downey	Langdon	W. C. Peterson	Langdon
125	Royal Cry. Co. s	Royal	A. Christensen	Sutherland	P. Asmussen	Royal
126	Fostoria Creamery Co. s	Fostoria	Olaf Hofstad	Spencer RFD	Edgar Chadwick	Fostoria
127	Far. Co-op. Cry. Co. c	Dickens	John Lawler	Dickens	W. A. Thayer	Dickens
128	Spencer Dairy Pro. Co. s	Spencer	C. W. Peterson	Spencer	Arthur Anderson	Spencer
129	Webb Creamery Co. i	Webb	Jas. Stowring	Webb	Jas. Stowring	Webb
	Clayton County—					
130	Far Cry. Co. c	Osterdock	H. A. Mallory	Garber	Irwin Grayhill	Osterdock
131	Garber Far. Co-op. Cry. Co. s	Garber	R. F. Smith	Garber	C. H. Pinch	Garber
132	Union Far. Cry. Co. c	Monona	W. O. Thompson	Elkader	Wm. Elsefeld	Monona
133	Northern Iowa Pro. Co. s	McGregor	Clair F. Limbeck	McGregor		
134	Crown Brand Cry. Co. i	Elkader	J. T. Leonard	Elkader	H. M. Clough	Elkader
135	Millville Cry. Co. c	Millville	Fred Mueller	Guttenberg		
136	Volga Far. Co-op. Cry. Assn. c	Volga	L. J. Tenney	Strawberry Pt.	Wm. McGuiness	Volga

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
137	Strawberry Pt. Far. Cry. Assn.....c	Strawberry Point	C. D. Wolcott	Strawberry Pt.	H. C. Ladage	Strawberry Pt.
138	Farmersburg & St. Olaf Co-op. Cry. Co.	St. Olaf	A. Larson	St. Olaf	Herbert Olson	St. Olaf
139	Littleport Far. Co-op. Cry. Co.....c	Littleport	G. C. Roegnitz	Elkport	Earl Batchelder	Littleport
140	Luana Farm. Co-op. Cry. Co.....c	Luana	Harry Roth	Luana	Ben Frank	Luana
141	Garnaville Far. Cry. Co.....c	Garnaville	A. J. Kregel	Garnaville	Jos. F. Fisher	Garnaville
142	Fidelity Cry. Co.....s	Edgewood	H. F. Beyer	Edgewood	Royal Firman	Edgewood
143	Far. Co-op. Cry. Co.....c	Edgewood	W. A. Robinson	Edgewood	P. A. Jordahl	Edgewood
	Clinton County—					
144	Clinton Co. Central Cry.....i	DeWitt	A. E. Banta	DeWitt	V. T. Hiryefen	DeWitt
145	Swift & Co. Prod. Dept.....s	Clinton	F. S. Hayward	Chicago, Ill.	J. W. Freed	Clinton
146	Farmers Co-op. Cry. Co.....c	Toronto	Edw. Hart, Jr.	Toronto	W. P. Schurke	Toronto
147	Farmers Co-op. Cry. Co.....c	Wheatland	W. A. Templeton	Wheatland	R. E. Long	Wheatland
148	Charlotte Cry. Co.....c	Charlotte	Martin Nielsen	Charlotte	Frank Bartels	Charlotte
149	Springbrook Creamery .....s	Preston	Geo. C. Huppertz	Preston	A. J. Nogus	Preston
	Crawford County—					
150	Nicholson Ice & Pro. Co.....s	Denison	B. Y. Nicholson	Denison	M. G. Hanson	Denison
	Dallas County—					
151	Far. Co-op. Cry. Assn.....c	Dexter	Jas. L. Keachle	Dexter	Jas. L. Keachle	Dexter
152	Woodward Creamery Co.....i	Woodward	Calonkey & Son	Woodward	C. H. Ramsey	Woodward
	Delaware County—					
153	Manchester Co-op. Cry. Co.....c	Manchester	M. S. VanAuken	Manchester	E. J. Reed	Manchester
154	Far. Co-op. Cry. Co.....c	Thorpe	M. E. Blair	Manchester	G. Steusele	Manchester
155	Hazel Green Cry. Co.....c	Ryan (6 mi. e.)	Daniel King	Delhi	A. Graham	Manchester
156	Silver Spring Cry. Co.....s	Delhi	E. B. Porter	Delhi	H. P. Bancroft	Delhi
157	Masonville Co-op. Cry. Co.....c	Masonville	Howard S. Allyn	Masonville	O. A. Sullivan	Masonville
	Delaware County—					
158	Delaware Cry. Co.....c	Delaware	A. W. Sackett	Delaware	J. F. Dawson	Delaware
159	Bear Grove Cry. Co.....c	Dyersville (8 mi. nw)	Wm. Dentmeyer	Dyersville R. 2	Jos E. Taylor	New Vienna, R 1
160	Hopkinton Co-op. Cry.....s	Hopkinton	I. T. Wilson	Hopkinton	Claude A. Miller	Hopkinton

161	Colesburg Co-op. Cry. Co.....s	Colesburg	Robert A. Gull	Colesburg	A. L. Landis	Colesburg
162	Greeley Far. Co-op. Cry. Co.....c	Greeley	J. E. Tracy	Greeley	W. B. Crabb	Greeley
163	Far. Mut. Cry. Co.....c	Sand Spring	J. W. Knepper	Sand Spring	J. L. Batchelder	Sand Spring
164	Far. Cry. Co.....c	Ryan	F. J. McKeever	Ryan Box 234	W. I. Dilger	Ryan
165	Earlville Cry.....i	Earlville	I. S. Hutton	Earlville	A. L. Binning	Earlville
	Dickinson County—					
166	Lake Park Co-op. Cry. Assn.....c	Lake Park	J. G. Chrysler	Lake Park	E. E. Starr	Lake Park
167	The Milford Far. Butter & Cheese Association.....c	Milford	Fred W. Born	Milford	Fred W. Born	Milford
168	Terril Co-op. Cry. Co.....c	Terril	L. A. Koon	Terril	Percy Tjossem	Terril
169	Western Packing Co.....s	Spirit Lake	H. E. Miller	Spirit Lake	Victor Welter	Spirit Lake
	Dubuque County—					
170	Holy Cross Creamery Co.....c	Holy Cross	Tony J. Maleus	N. Buena Vista	Jas. Metsod	N. Buena Vista
171	Hague Cry. Co.....i	Zwingle	H. S. Hague	Zwingle	H. S. Hague	Zwingle
172	Sherrill Mut. Co-op. Cry. Assn.....c	Sherrill	J. C. Boleyn	Dubuque	Fred Koehler	Specials Ferry
173	Worthington Cry. Co.....i	Worthington	C. Baehler	Worthington	C. Baehler	Worthington
174	N. Vienna Central Cry.....s	N. Vienna (5 mi. n. Dyersville)	H. F. Smith	New Vienna	M. O. Buroker	N. Vienna
175	Globe Cry. Co.....c	Luxemburg	Geo. Friedmann	Turkey River	J. P. Cripps	N. Vienna
176	Farley Cry. Co.....s	Farley	G. W. Cropp	Farley	P. E. Landis	Farley
177	Beatrice Cry. Co.....s	Dubuque	Beatrice Cry. Co.	Dubuque	Tony Norskog	Dubuque
178	Iowa Dairy Co.....s	Dubuque	Andrew Fleutsch	Dubuque	Henry Williamson	Dubuque
179	Fot. Golden Star Cry. Co.....c	Dyersville	Albert J. Kern	Dyersville	Wm. Cornell	Dyersville
180	Hickory Valley Cry. Co.....r	Dyersville (6 mi. se.)	John Raum	Farley	Peter Goetzinger	Farley
181	Cascade Co-op. Cry. Co.....c	Cascade	P. J. Conlin	Cascade	Albert Fay	Cascade
182	Balltown Far Co-op. Cry. Co.....c	Balltown	L. J. Skeworth	Waupeton	Al. Barker	Waupeton
183	Swift & Co.....s	Dubuque	F. S. Hayward	Chicago	Frank Gonser	Dubuque
	Emmet County—					
184	Armstrong Creamery Co.....i	Armstrong	Geo. Froom	Armstrong	Geo. Froom	Armstrong
185	Far. Cry. Co.....c	Wallingford	O. O. Befrell	Wallingford	Chas. Bippien	Wallingford
186	Ringsted Co-op. Cry. c	Ringsted	A. Rise	Ringsted	J. C. Jensen	Ringsted
	Fayette County—					
187	Oran Cry. Co.....c	Oran	J. M. Getz	Oran	B. F. Bentley	Oran
188	German Cry. Co.....c	Westgate (4 mi. ne.)	Wm. Seegers	Westgate R. 1	E. H. Homan	Westgate, R 1
189	Maple Grove Cry. Co.....c	Oelwein	Thos. Sadler	Oelwein	Thos. Sadler	Oelwein
190	Alpha Far. Cry. Co.....c	Alpha	H. A. Goodnow	Alpha	W. A. Hiser	Alpha
191	Richfield Cry. Co.....c	Sumner (6 mi. n.)	P. G. Niemann	Sumner	C. A. Day	Sumner
192	Far. Mut. Co-op. Cry. Co.....c	Stanley (6 mi. n.)	L. G. Getts	Arlington	D. T. Broers	Stanley
193	Wauconma Far. Co-op. Cry. Assn..c	Wauconma	E. U. Farr	Wauconma R. 3	Frank Shipton	Wauconma
194	Riverside Cry. Co.....i	Wadena	P. J. Schroeder	Wadena	M. M. Sorenson	Wadena
195	Westgate Co-op. Cry. Co.....c	Westgate	P. S. Coleman	Westgate	H. C. Barnes	Westgate
196	Far. Co-op. Cry.....c	St. Lucas	G. H. Hackman	St. Lucas	Ben. H. Klennen	St. Lucas

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
197	Center Valley Cry. Co. c	Randalia (6 mi. sw.)	P. J. Messerer	Sumner	R. L. Alderson	Sumner
198	Jefferson Cry. Co. c	Oelwein (3 mi. nw.)	Fred W. Grummels	Oelwein R. 1	A. H. Bentz	Oelwein, R 1
199	Harlan Far. Mut. Co-op. Cry. Co. c	Maynard	J. C. Lewis	Maynard	C. F. Bracy	Maynard
200	Hawkeye Co-op. Cry. Co. c	Hawkeye	Frank Ostrander	Hawkeye	Frank Bowdish	Hawkeye
201	Fayette Cry. Assn. c	Fayette	Peter E. Jubb	Fayette	Ralph Porter	Fayette
202	Elgin Far. Dairy Co. c	Elgin	Melchr Luchsinger	Elgin	R. G. Gehring	Elgin
203	Clermont Valley Cry. Co. c	Clermont	Frank Fay	Clermont	Amon Erickson	Clermont
204	Far. Creamery Co. c	Arlington	Floyd Pusey	Arlington	E. E. Middlestadt	Arlington
205	Oelwein Cry. Co. c	Oelwein	L. C. Harwood	Oelwein	O. A. Hanson	Oelwein
206	West Union Far. Cry. Co. c	West Union	E. W. Chandler	West Union	S. Peterson	West Union
	Floyd County—					
207	Rockford Co-op. Dairy Assn. c	Rockford	Geo. Hillman	Rockford	J. O. Ersland	Rockford
208	Colwell Cry. i	Colwell	Frank Brunner	Colwell	Frank Brunner	Colwell
209	Chas. City Cry. Co. i	Charles City	N. H. Nelson	Charles City	Albert Kroby	Charles City
210	Nora Springs Cry. & Pro. i	Nora Springs	W. F. Miner	Nora Springs	C. Erickson	Nora Springs
	Franklin County—					
211	Sheffield Creamery Co. i	Sheffield	A. E. Adams	Sheffield	A. E. Adams	Sheffield
212	Far. Co-op. Cry. Co. c	Popejoy	J. G. Freeze	Dows	H. J. Binger	Popejoy
213	W. F. Preibe Co. s	Hampton	J. C. Phillips	Hampton	F. C. Koenig	Hampton
214	Far. Co-op. Cry. Co. c	Dows	H. J. Iverson	Dows	Frank L. Larson	Dows
	Franklin County—					
215	Latimer Co-op. Cry. Co. c	Latimer	Chas. Johnson	Latimer	Rasmus Nelson	Latimer
216	Hamilton Cry. Co-op. Co. c	Coulter	Geo. Dohmann	Hampton	Fred Thompson	Coulter
217	Farmers Creamery Co. c	Alexander	P. T. Christensen	Alexander	P. T. Christensen	Alexander
218	Bradford Creamery Co. i	Bradford	Geo. Freese	Bradford	H. Brokaw	Bradford
	Greene County—					
219	G. W. Nicholson Co. s	Grand Junction	W. W. Wertz	Grand Jct.	C. W. Larson	Grand Junction
220	Jefferson Creamery Co. i	Jefferson	C. E. Mills	Jefferson	F. Wilcox	Jefferson
	Grundy County—					
221	Buck Grove Cry. Co. i	Parkersburg (7 mi. sw)	H. G. Kramer	Aplington	C. G. Nelson	Aplington
222	Prederille Co-op. Cry. Co. c	Dike (4 mi. ne.)	N. C. Snydergaard	Cedar Falls R. 3	Hartmann Anderson	Cedar Falls

223	Beaver Center Cry. Co. c	Stout (2 mi. sw.)	Andrew J. Meyer	Stout	T. E. Dilger	Stout
224	Fern Creamery Co. c	Parkersburg	W. H. Heming	Parkersburg	B. T. Soles	Stout
225	German Township Cry. Co. i	Ackley (9 mi. se.)	F. J. Martin	Ackley	Henry Schutjer	Aplington
	Guthrie County—					
226	Panora Co-op. Cry. Co. c	Panora	A. T. Johnson	Panora	A. T. Johnson	Panora
227	Menlo Cry. Co. s	Menlo	P. L. P. Hitchcock	Menlo	H. H. Colbert	Menlo
228	Guthrie Center Co-op. Cry. Co. c	Guthrie Center	W. C. Corrigan	Guthrie Center	L. L. Coon	Guthrie Center
229	Casey Cry. Co. c	Casey	Harlie E. Smith	Casey	J. F. Oddy	Casey
230	Bayard Co-op. Cry. Co. c	Bayard	Hugh Carothers	Bayard	B. Surridge	Bayard
	Hamilton County—					
231	Jewell Cry. Co. i	Jewell	Davis & Francisco	Jewell	F. L. Francisco	Jewell
232	Far. Co-op. Cry. Co. s	Stratford	Edw. Peterson	Stratford	John Bierson	Stratford
233	Ellsworth Co-op. Cry. Assn. c	Ellsworth	Stemberg	Radcliffe	O. B. Stemberg	Ellsworth
234	Randall Far. Cry. Co. c	Randall	M. G. Olson	Randall	M. G. Olson	Randall
235	Ellingson Mathre & Co. i	Webster City	Ellingson-Mathre Co.	Webster City	C. L. Best	Webster City
	Hancock County—					
236	Kanawha Far.Mut. Co-op. Cry. Co c	Kanawha	Geo. McNeish	Kanawha	W. H. Anderson	Kanawha
237	Woden Far. Cry. Co. c	Woden	Adolf Orthel	Woden	John Paulsen	Woden
238	Concord Cry. Co. c	Venture (2½ mi. e.)	Albert Fenger	Garner	Albert Fenger	Garner
239	Far. Co-op. Cry. Co. c	Garner	J. Kiesel	Garner	C. R. Conway	Garner
240	Crystal Cry. Co. c	Crystal Lake	H. P. Stahr	Crystal Lake	H. P. Engen	Crystal Lake
241	Britt Co-op. Cry. Co. c	Britt	H. A. Schaper	Britt	Geo. G. Kolthoff	Britt
242	Klemme Co-op. Cry. Co. c	Klemme	N. L. Palmer	Klemme	A. D. Gilner	Klemme
	Hardin County—					
243	Aldon Co-op. Cry. Co. c	Alden	E. C. Edwards	Alden	Floyd Kidd	Alden
244	Eldora Cry. Co. i	Eldora	Peter Jensen	Eldora	D. P. Aylesworth	Eldora
245	Hubbard Co-op. Cry. Co. c	Hubbard	H. K. Grauer	Hubbard	Fred Herzog	Hubbard
246	Iowa Falls Cry. Co. c	Iowa Falls	E. E. Benedict	Iowa Falls	J. R. Jones	Iowa Falls
247	Concord & Scott Cry. Co. c	Radcliffe	D. H. Bobb	Radcliffe	D. H. Bobb	Radcliffe
248	Owasa Co-op. Cry. Co. c	Owasa	W. N. McLenon	Owasa	H. Soballe	Owasa
249	Swift & Co. s	Iowa Falls	F. S. Hayward	Chicago, Swift & Co.	J. D. Plete	Iowa Falls
250	Cleves Cry. Co. i	Cleves	J. J. Lindemann	Cleves	J. E. Sharp	Cleves
251	Ackley Creamery Co. i	Ackley	R. R. Hadley	Ackley	Wm. Nielson	Ackley
	Harrison County—					
252	The Community Cry. Co. i	Woodbine	Floyd Elston	Woodbine	F. A. Maxwell	Woodbine
	Henry County—					
253	Pleasant Hill Dairy i	Mt. Pleasant	Neal Campbell	Mt. Pleasant	Neal Campbell	Mt. Pleasant

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
	Howard County—					
253	Maple Leaf Cry. Co. c	Elma	D. Lane	Elma R. 1	N. W. Graf	Elma, R 1
254	Far. Co-op. Cry. Co. c	Protivin	J. A. Dostal	Protivin	Chas. W. Chyle	Protivin
255	Saratoga Co-op. Cry. Co. c	Saratoga	Frank Rutcka	Lime Springs	E. F. Conway	Saratoga
256	Elma Co-op. Cry. Co. c	Elma	J. P. Whelan	Elma	J. P. Whelan	Elma
257	Cresco Cry. Co. i	Cresco	Palmer & Nelson	Cresco	L. A. Palmer	Cresco
258	Selley Cry. Co. i	Cresco (10 mi. sw.)	C. A. Fuase	Cresco	L. H. Dorr	Cresco
259	Far. Co-op. Cry. Asso. c	Chester	L. A. Eggerichs	Chester	G. W. Simes	Chester
260	Fars. Co-op. Cry. Co. c	Lime Springs	V. S. Bowers	Lime Springs	Joe C. Dugan	Lime Springs
261	Far. Cry. Co. s	Cresco	B. M. Thomson	Cresco	S. L. Baumgartn	Cresco
	Humboldt County—					
262	Thor Cry. Co. s	Thor	J. E. Lonning	Thor	B. E. Lonning	Thor
263	Rutland Co-op. Cry. Asso. c	Rutland	Mitford Gregersen	Rutland	Joe Bogh	Rutland
264	Wacousta Cry. Asso. c	Ottosen	L. J. Brenson	Ottosen	L. J. Brenson	Ottosen
265	Humboldt Cry. Co. s	Humboldt	B. E. Gray	Humboldt	A. J. Helvig	Humboldt
266	Bode Cry. Asso. c	Bode	H. C. Olson	Bode	P. W. Johnson	Bode
267	Bradgate Cry. Co. i	Bradgate	E. H. Avery	Bradgate	D. A. O'Neil	Bradgate
	Ida County—					
268	Far. Cry. Co. c	Galva	Wm. Zwenke	Galva	R. D. Ewing	Galva
	Iowa County—					
269	Genoa Bluff Cry. Co. c	Ladora (6 mi. se.)	L. J. Tanner	Marengo R. 2	R. O. Rae	Marengo, R 1
270	Marengo Far. Mut. Co-op. Cry. Association c	Marengo	Dennis Sullivan	Marengo	W. H. Sampson	Marengo
271	Victor Co-op. Cry. Co. c	Victor	L. E. Brown	Victor	Wm. Boyle	Victor
272	Troy Cry. Co. c	Williamsburg	Geo. C. House	Williamsburg	W. R. Edwards	Williamsburg
273	York Cry. Co. c	Williamsburg	H. W. Hudepohl	S. Amana R. 1	G. C. Steinke	Williamsburg R 1
	Jackson County—					
274	Monmouth Cry. Co. i	Monmouth	Frank G. Irons	Monmouth	F. G. Irons	Monmouth
275	Hansen Pro. Co. Inc. s	Maquoketa	E. D. Hansen	Maquoketa	G. S. Wing	Maquoketa
276	St. Donatus Cry. Co. i	St. Donatus	J. G. Heinrig	St. Donatus	Ed. C. Hottsch	St. Donatus
277	Sterling Cry. Co. i	Lamotte	Hoffman Cry. Co.	Lamotte	John M. Hoffman	Lamotte
278	Preston Cry. Asso. c	Preston	Samuel McNeil	Preston	Jas. Gordon	Preston
279	Far. Union Co-op. Cry. c	Maquoketa (6 mi. w.)	M. W. James	Maquoketa	H. C. Thompson	Maquoketa
280	Fars. Cry. Co. s	Sabula	F. O. White	Sabula	W. J. Kroeger	Sabula
281	Bellevue Cry. Co. i	Bellevue	J. F. Runkle	Bellevue	Warren Maer	Sabula

	Jasper County—					
282	Newburg Cry. Co. c	Newburg	C. F. Devore	Newburg	H. W. Spencer	Newburg
283	Dairyland Dairy Co. i	Newton	Guy M. Lambert	Newton	Walter H. Anderson	Newton
	Johnson County—					
284	Iowa City Cry. & Pro. Co. s	Iowa City	A. J. Feeney	Iowa City	Ross Saverid	Iowa City
	Jones County—					
285	Farmers Co-op. Cry. Co. c	Monticello	O. W. Brazelton	Monticello	Fred Lehman	Monticello
286	Scotch Grove Co-op. Cry. Co. c	Scotch Grove	H. R. Jacobs	Scotch Grove	Harry Johnson	Scotch Grove
287	Langworthy Co-op. Cry. Co. c	Langworthy	John H. Batchelder	Langworthy	John H. Batchelder	Langworthy
288	Amber Co-op. Creamery Co. c	Amber	P. B. Daly	Amber	Robt. Wagner	Amber
289	Fars. Co-op. Cry. Co. c	Center Junction	C. A. Burmeister	Center Jct.	F. E. Craig	Center Junction
290	Anamosa Fars. Cry. Co. c	Anamosa	Henry Morey	Anamosa	Frank Nichols	Anamosa
291	Iowa Cry. Co. s	Oxford Junction	S. L. Murphy	Oxford Jct.	Ernest Barker	Oxford Junction
	Keokuk County—					
292	Geo. M. Griffin Co.	Sigourney	Geo. M. Griffin	Providence, R. I.	R. E. Hall	Sigourney
293	What Cheer Cry. Co. i	What Cheer	S. E. Bateman	What Cheer		
	Kossuth County—					
294	Ledyard Co-op. Cry. Asso. c	Ledyard	F. S. Jenks	Ledyard	H. M. Dyer	Ledyard
295	Rahm Cry. Co. i	St. Benedict	E. F. Rahm	St. Benedict	T. P. Klein	St. Benedict
296	Whittemore Fars. Cry. Co. c	Whittemore	Thos. Carmody	Whittemore	D. L. Driver	Whittemore
297	The Lotts Creek Co-op. Cry. Co. c	Lone Rock (6 mi. sw.)	Otto Wehrenbahl	Lone Rock	Fred Kocker	Lone Rock
298	Swea City Co-op. Cry. Co. c	Swea City	Miss Ella Christensen	Swea City	Carl Nelson	Swea City
299	Sexton Co-op. Cry. Co. c	Sexton	C. A. Little	Sexton	L. H. Larson	Sexton
300	Lone Rock Co-op. Cry. Co. c	Lone Rock	Robt. Jacobs	Lone Rock	Will Helgason	Lone Rock
301	Fars. Co-op. Cry. Co. c	Hobart	F. L. Boals	Algona	Joel Bloxster	Algona
302	Germania Co-op. Cry. Co. c	Germania	F. W. Guthknecht	Germania	H. W. Jarnow	Germania
303	Fenton Cry. Co. c	Fenton	C. F. C. Lange	Fenton	C. F. Bollig	Fenton
303	Bancroft Co-op. Cry. Co. c	Bancroft	Chas. P. Hanson	Bancroft	M. J. Dyer	Bancroft
304	Burt Co-op. Cry. Co. c	Burt	M. E. Warner	Burt	Watson Shick	Burt
305	Algona Co-op. Cry. Co. c	Algona	D. A. Wallace	Algona	L. S. Edwards	Algona
306	Titonka Co-op. Cry. Co. c	Titonka	J. C. Newville	Titonka	S. S. Hudson	Titonka
	Lee County—					
307	Swift & Co. s	Keokuk	F. S. Hayward	U. S. Stock Yards, Chicago	Frank Payne	Hamilton, Ill.
	Linn County—					
308	Blue Valley Cry. Co. s	Cedar Rapids	C. J. Walker	Chicago, Ill.	T. D. Carnes	Cedar Rapids
309	Walker Iowa Cry. Co. i	Walker	H. J. Nietert	Walker	S. W. Laird	Walker
310	Springville Cry. Co. i	Springville	C. E. Batchelder	Springville	Chas. Huettner	Springville
311	Center Pt. Cry. Co. i	Center Point	Pollock & Romin	Center Point	C. N. Pollock	Center Point
312	Valley Farm Cry. Co. i	Central City	Henderson & Henderson	Central City	Irvin George	Central City

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
313	Central City Cry. Co.	Central City	E. E. Henderson	Central City	Earl George	Central City
314	Coggon Creamery Co.	Coggon	O. C. Capper	Coggon	O. C. Capper	Coggon
	Lucas County—					
315	Douglas Ice Cream Co.	Chariton	L. P. Douglas	Chariton	W. C. Miller	Chariton
	Lyon County—					
316	Fars. Co-op. Cry. Assn.	Inwood	L. B. Holland	Inwood	A. W. Wilander	Inwood
317	George Cry. Co.	George	C. A. Rasmussen	George	Ed. Wilson	George
318	Rock Rapids Cry. Co.	Rock Rapids	W. J. Purchas	Rock Rapids	A. F. Robertson	Rock Rapids
	Mahaska County—					
319	Oskaloosa Cry. Co.	Oskaloosa	Keota Pro. Co.	Oskaloosa	D. W. Holly	Oskaloosa
	Marion County—					
320	Lake Prairie Cry. Co.	Pella	C. H. Randall	Pella	T. Smorenburg	Pella
	Marshall County—					
321	Marshalltown Cry. Co.	Marshalltown	H. W. Logsdon	Marshalltown	Geo. L. Richardson	Marshalltown
322	State Center Fars. Cry. Assn.	State Center	F. C. Brown	State Center	Chris Jessen	State Center
323	Minerva Valley Cry. Co.	Clemons	L. H. Armbrecht	Clemons	E. M. Frederiksen	Clemons
	Mills County—					
324	Glenwood Cry. Co.	Glenwood	J. G. MacKellar	Glenwood	J. G. MacKellar	Glenwood
	Mitchell County—					
325	New Haven Cry. Co.	New Haven	Julius Brunner	Osage R. 6	J. Brunner	Osage
326	Little Cedar Cry. Co.	Little Cedar	Chas. Woodlwiss	Little Cedar	A. J. McPhail	Little Cedar
327	Osage Co-op. Cry. Assn.	Osage	John Torsleff	Osage	Geo. Burdette	Osage
328	St. Ansgar Cry. Co.	St. Ansgar	M. A. Tollefson	St. Ansgar	H. B. Bullis	St. Ansgar
329	Fars. Co-op. Assn.	Orehard	E. O. Clapper	Orehard	Albert Tieman	Orehard
330	Rock Creek Co-op. Cry. Assn.	Osage	H. L. Johnson	Rudd	J. E. McCaffrey	Osage
331	Stacyville Cry. Co.	Stacyville	W. A. Schrandt	Stacyville	A. F. Matson	Stacyville
332	Riceville Cry. Co.	Riceville	John Christiansen	Riceville	John Christiansen	Riceville
	Monona County—					
333	Moorhead Cry. Co.	Moorhead	P. D. Nelson	Moorhead	Nels Nelson	Moorhead

	Monroe County—					
334	Albia Cry. Co.	Albia	Sam Jones	Albia	Earl Burlingame	Albia
	Montgomery County—					
335	Tyler Bros. Cry. Co.	Villisca	R. F. Tyler	Villisca	Henry Tyler	Villisca
	Muscatine County—					
336	W. Liberty Co-op. Cry. Co.	West Liberty	Emmett Buckman	West Liberty	W. H. Sampson	W. Liberty
	O'Brien County—					
337	The Hartley Cry. Co.	Hartley	Chas. W. Green	Hartley	Chas. W. Green	Hartley
338	Sutherland Cry. Co.	Sutherland	Adolph Christensen	Sutherland	A. Christensen	Sutherland
339	Sheldon Cry. Co.	Sheldon	D. A. Miller	Sheldon	L. E. Woodewiss	Sheldon
340	Caledonia Cry. Co.	Paullina	J. C. Lamga	Paullina	Wm. Gehrls	Paullina
341	Archer Cry. Co.	Archer	B. G. Remsink	Archer	F. Weltzer	Archer
	Osceola County—					
342	Ashton Cry. Co.	Ashton	Evert Den Herder	Ashton	E. Den Herder	Ashton
343	Sibley Cry. Co.	Sibley	H. C. Kofoed	Sibley	H. C. Kofoed	Sibley
344	Melvin Cry. Co.	Melvin	Fred W. Year	Melvin	J. C. Turner	Melvin
	Page County—					
345	Swift & Co.	Clarinda	F. S. Hayward	U. S. Stock Yds., Chicago	C. H. Carson	Clarinda
	Palo Alto County—					
346	Depew Cry. Co.	Cylinder	P. O. Duer	Emmetsburg	Ray A. Trebil	Cylinder
347	W. Bend Co-op. Cry. Co.	West Bend	A. L. Pryc	West Bend	O. W. Dubbs	W. Bend
348	Fars. Co-op. Cry. Co.	Ruthven	G. A. Appelman	Ruthven	M. P. Jonker	Ruthven
349	Mallard B. & C. Assn.	Mallard	T. C. Truog	Mallard	T. R. Wilson	Mallard
350	Lost Island Cry. Co.	Graettinger	A. C. Christiansen	Graettinger	Henry Hansen	Graettinger
351	Emmetsburg Cry. Co.	Emmetsburg	L. Stuehmer	Emmetsburg	M. Anderson	Emmetsburg
352	Silver Lake Cry. Co.	Ayreshire	F. W. Shellman	Ayrshire	F. W. Shellman	Ayreshire
352	Fairville Cry. Co.	Fairville (8 mi. ne Cylinder)	C. H. Blackwenn	Cylinder	Robt. Rees	Cylinder
353	Fars. Co-op. Cry. Co.	Graettinger	Jorgen Anderson	Graettinger	Wm. Matters	Graettinger
354	Rodman Cry. Co.	Rodman	Elmer Gustafson	Rodman	Elmer Gustafson	Rodman
	Plymouth County—					
355	Lemars Cry. Co.	LeMars	Hutchinson Bros. Co.	Sioux City	P. E. Mornor	LeMars
356	Plymouth Cry. Co. Inc.	Brunsville	Jobe Kennedy	Brunsville	Jobe Kennedy	Brunsville
	Pocahontas County—					
357	Pocahontas Cry. Co.	Pocahontas	Geo. Selbels	Pocahontas	Gust Webler	Pocahontas
358	Laurens Cry. Co.	Laurens	J. G. Hinn	Laurens	F. W. Johnson	Laurens
359	Palmer Cry. Co.	Palmer	Ed. V. Johnson	Palmer	Ed. V. Johnson	Palmer

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
	Polk County—					4100 Kingman Blvd
350	Des Moines Cry. Co.	Des Moines	L. B. Schermerhorn	Des Moines, Rt. 906	A. L. Larson	Des Moines
351	Swift & Co.	Des Moines	F. S. Hayward	U. S. Stock Yds., Chicago.	B. G. Christenson	Des Moines
352	Fars. Co-op. Pro. Co.	Des Moines	L. O. Loiseaux	Des Moines	N. Danielson	Des Moines
353	Beatrice Cry. Co.	Des Moines	H. R. Wright	Des Moines	S. R. Pemberton	Des Moines
	Pottawattamie County—					
354	Bloomer Cold Storage Co.	Council Bluffs	G. D. Bridenbaugh	Council Bluffs	Sam Chambers	Council Bluffs
	Poweshiek County—					
355	Grinnell Cry., Ice & Cold Storage Plant	Grinnell	J. W. Fowler	Grinnell	E. T. Woodward	Grinnell
356	Brooklyn Cry. Co.	Brooklyn	G. H. Guthrie	Brooklyn	G. H. Guthrie	Brooklyn
	Ringgold County—					
357	Mt. Ayr Cry. Co.	Mt. Ayr	L. O. Bement	Mt. Ayr	L. O. Bement	Mt. Ayr
	Sac County—					
358	Hillman Cry. Co.	Lytton	Art Ninaman	Lake City	Geo. Hillmann	Lytton
359	Fars. Co-op. Cry. Co.	Early	W. W. Little	Early	Andrew Kanstadt	Early
360	Lake View Cry. Co.	Lake View	E. C. Rogers	Lake View	E. C. Rogers	Lake View
361	Sac City Cry. Co.	Sac City	A. C. Schultz	Sac City	I. H. Sallue	Sac City
	Scott County—					
372	Star. Cry. Co.	Long Grove	J. H. Marriott	Long Grove	J. W. Blair	DeWitt
373	Bell Jones Cry. Co.	Davenport	M. V. Jones	Davenport, 515 E. 4th	Geo. Ferris	Davenport 518 Brady St
			N. O. Crissey	Galesburg, Ill.	L. Jacobsen	Davenport
374	Davenport Cry. Co.	Davenport	P. J. Lyngholm	Davenport		
374½	Tri-City Butter Co.	Davenport				
	Shelby County—					
375	Buck Valley Cry. Co.	Kimballton (3 mi. nw)	H. H. Jorgensen	Harlan R. 2	Chris B. Jensen	Harlan, R 3
376	Harlan Ice & Cold Storage Co.	Harlan	M. Ankerstjern	Harlan	M. Ankerstjern	Harlan

	Sioux County—					
377	Fars. Co-op. Cry. Assn.	Hull	J. W. Smit	Hull R. 1	Aug. M. Hein	Hull
378	Hawarden Cry. Co.	Hawarden	Emil Zorr	Hawarden	C. J. Zylstra	Hawarden
379	Hospers Cry. Co.	Hospers	Stover & Vander Meer	Hospers	Wm. H. Gebris	Hospers
380	Alton Cry. Co.	Alton	C. J. Mueller	Alton	Herbert Lucas	Alton
381	Fars. Mutual Co-op. Cry. Assn.	Orange City	Wm. J. Sterrenburg	Orange City R. 3	Dick Sterrenburg	Orange City
382	Fars. Co-op. Cry. Co.	Boyden	John Renkink	Boyden	H. J. Wargnsky	Boyden
383	Far. Mut. Co-op. Cry. Co.	Sioux Center	J. E. Vermeer	Sioux Center	A. Yonker	Sioux Center
384	Rock Valley Cry. Co.	Rock Valley	F. Vander Stoep	Rock Valley	Ed. Vander Stoep	Rock Valley
	Story County—					
385	Fars. Mut. Co-op. Cry. Assn.	Gilbert	C. P. Lake	Gilbert	C. P. Lake	Gilbert
386	The Huxley Fars. Co-op. Cry. Co.	Huxley	Sam Maland	Huxley	O. J. Olsen	Huxley
387	Roland Fars. Cry. Co.	Roland	E. M. Rod	Roland	Geo. Wick	Roland
388	Story City Cry. Co.	Story City	Fred Miller	Story City	Fred Miller	Story City
389	Fars. Co-op. Cry. Co.	Slater	Chas. Skortinan	Slater	C. Clark	Slater
390	Zearing Cry. Co.	Zearing	C. P. Bean	Zearing	F. D. Shiflet	Zearing
391	Dairy Dept. Iowa State College	Ames	M. Mortensen	Ames	J. J. Brunner	Ames
392	McCallsburg Fars. Cry. Co.	McCallsburg	G. J. Vallem	McCallsburg	C. T. Knutson	McCallsburg
	Tama County—					
393	J. H. Nell Cry. Co.	Tama	J. H. Nell	Tama	C. F. Lorthey & J. E. DeCharme	Tama
394	Gladbrook Cry. Co.	Gladbrook	C. S. Mitchell	Gladbrook	C. S. Mitchell	Gladbrook
395	Traer Cry. Co.	Traer	G. E. Olson	Traer	Carl Hansen	Traer
	Taylor County—					
396	The Bedford Cry. Co.	Bedford	Frank Dunning	Bedford	Leslie Kloff	Bedford
397	Peacock Cry. Co.	Lenox	A. H. Peacock	Lenox		
	Union County—					
398	Fars. Co-op. Cry. Co.	Afton	V. O. Williams	Afton	V. O. Williams	Afton
399	Swift & Co.	Creston	F. S. Hayward	U. S. Stock Yds., Chicago	Leonard Bretherton	Creston
	Van Buren County—					
400	Blue Grass Cry. Co.	Stockport	W. T. Dow	Stockport	J. B. Garrett	Stockport
	Wapello County—					
401	Swift & Co.	Ottumwa	F. S. Hayward	U. S. Stock Yds., Chicago.	L. R. Robson	Ottumwa
402	Yorkshire Cry. Co.	Ottumwa	R. N. Morrell	Ottumwa	N. T. Harvey	Ottumwa
403	F. G. Buxton Cry. Co.	Ottumwa	F. G. Buxton	Ottumwa Rt. 66	P. N. Keltner	Ottumwa, 613 Hancock street
	Washington County—					
403½	Hawkeye Condensed Milk Co.	Brighton	T. Thomson	Brighton	G. J. Gudknecht	Brighton

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
	Wayne County—					
404	Old Colony Cry. Co.	Humeston	J. L. Humphrey, Jr.	Humeston	M. W. Bixby	Humeston
405	Corydon Cry. Co.	Corydon	J. K. Green	Corydon	E. F. Davis	Corydon
	Webster County—					
406	Gold Bar Cry. Co.	Ft. Dodge	S. U. Deneker	Ft. Dodge	R. Deneker	Ft. Dodge
407	Ft. Dodge Cry. Co.	Ft. Dodge	A. R. Loomis	Ft. Dodge	B. Jensen	Ft. Dodge
408	Dayton Co-op. Cry. Co.	Dayton	J. A. Cling	Dayton	R. E. Palmer	Dayton
409	Gowrie Co-op. Cry. Co.	Gowrie	J. E. T. Johnson	Gowrie	A. E. McClune	Gowrie
	Winnebago County—					
410	Fars. Co-op. Cry. Assn.	Forest City	T. C. Jacobson	Forest City	J. B. Frisbie	Forest City
411	Lake Mills Cry. Co.	Lake Mills	Ole T. Groe	Lake Mills	Carl Hovland	Lake Mills
412	Lincoln Co-op. Cry. Co.	Rake	A. A. Sheldon	Rake	L. K. Bjorke	Rake
413	Scarville Cry. Assn.	Scarville	J. E. Hermanson	Scarville	Sorn Kristensen	Scarville
414	Vinje Cry. Assn.	Scarville	Ole Strom	Scarville	H. C. Stendel	Scarville
415	Thompson Co-op. Cry. Assn.	Thompson	M. M. Tapager	Thompson	A. M. Hanson	Thompson
416	Buffalo Center Co-op. Cry. Co.	Buffalo Center	B. E. Hook	Buffalo Center	B. Swanson	Buffalo Center
417	Leland Co-op. Cry. Co.	Leland	O. M. Peterson	Leland	S. O. Rosley	Leland
	Winneshiek County—					
418	Ridgeway Cry. Co.	Ridgeway	L. T. Fosse	Ridgeway	G. G. Bowers	Ridgeway
419	Lincoln Cry. Co.	Ridgeway	O. O. Rue	Ridgeway	J. H. Bakken	Ridgeway
420	Silver Springs Cry. Co.	Ossian	H. P. Nicholson, Jr.	Ossian	Ole O. Hauge	Ossian
421	Nordness Cry. Co.	Nordness	J. N. Bragestad	Decorah R. 1	Victor V. Johnson	Decorah, R 2
422	Highlandville Cry. Co.	Newhouse, Minn. (8 mi. east)	Bidue & Akre	Highlandville	P. J. Bidue	Highlandville
423	Festina Cry. Co.	Festina	J. B. Huinker	Calmar	Mike Hauer	Calmar
424	Calmar Cry. Co.	Calmar	A. A. Olson	Calmar	I. O. Barlow	Calmar
425	Silver Creek Cry. Co.	Burr Oak	W. H. Emmons	Burr Oak	L. C. Albaugh	Burr Oak
426	Decorah Fars. Ice Cave Cry. Co.	Decorah	N. O. Bendickson	Decorah	N. O. Bendickson	Decorah
427	Pleasant Co-op. Cry. Co.	Decorah (11 mi. ne)	Geo. A. Lundy	Decorah R. 7	D. H. Clymer	Decorah, R 7
	Woodbury County—					
428	Blue Valley Cry. Co.	Sioux City	C. J. Walker	Chicago, Ill.	C. L. Smith	Sioux City
429	Arctic Cry. Co.	Sioux City	C. E. Gear	613 Nebr. St., Sioux City	Paul Hough	Sioux City
430	Hanford Pro. Co.	Sioux City	J. H. Whittemore	Sioux City	M. O. Wheelock	Sioux City

	Worth County—					
431	Joice Cry. Co.	Joice	M. O. Evans	Joice	J. H. Hagen	Joice
432	Fars. Co-op. Cry. Assn.	Kensett (10 mi. nw)	O. K. Storre	Kensett	A. O. Peterson	Northwood
433	Hartland Cry. Co.	Northwood (9 mi. nw)	S. G. Bjorlie	Emmons, Minn., R. 2		
434	Fars. Co-op. Cry. Co.	Manly	E. R. Stoek	Manly	A. O. Dahlen	Northwood
435	Fars. Butter & Cheese Assn.	Northwood	M. D. Johnson	Northwood R. 6	F. C. Hinze	Manly
436	Kensett Cry. Co.	Kensett	Nils Gylleck	Kensett	F. D. Warner	Northwood
437	Fertile Co-op. Dairy Co.	Fertile	J. A. Johnson	Fertile	Nils Gylleck	Kensett
438	Hanlontown Cry. Co.	Hanlontown	H. Burtness	Hanlontown	J. A. Johnson	Fertile
	Wright County—				E. A. Godvangen	Hanlontown
439	Goldfield Co-op. Cry. Co.	Goldfield	C. M. Clausen	Goldfield	N. J. Nielson	Goldfield
440	Fountain Cry. Co.	Eagle Grove	W. E. Mann	Eagle Grove	B. J. Burger	Eagle Grove
441	Fars. Co-op. Cry. Co.	Belmond	G. P. Elder	Belmond	C. H. Jennings	Belmond
442	Clarion Cry. Assn.	Clarion	W. Johnson	Clarion	J. W. Cagley	Clarion
443	Norway Co-op. Cry. Co.	Kanawha	O. L. Lein	Kanawha R. 5	L. R. Roderick	Kanawha, R 3

INDEX

STATE OF IOWA

1915

REPORT OF THE

State Mine Inspectors

FOR THE

Biennial Period Ending December 31, 1915

INSPECTORS

W. E. HOLLAND, Albia, Iowa
RHYS T. RHYS, Ottumwa, Iowa
EDWARD SWEENEY, Des Moines, Iowa
L. E. STAMM, Secretary, Des Moines, Iowa

DES MOINES
ROBERT HENDERSON, STATE PRINTER
J. M. JAMIESON, STATE BINDER