

NINTH ANNUAL REPORT

OF THE

STATE DAIRY COMMISSIONER

TO THE

GOVERNOR OF THE STATE OF IOWA,

FOR THE YEAR 1895.

W. K. BOARDMAN,

State Dairy Commissioner.

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1895.

REPORT.

To His Excellency, Hon. Frank D. Jackson, Governor of Iowa:

I hereby submit my report as Dairy Commissioner of the state of Iowa for the year ending October 31, 1895.

I have the pleasure to report in detail, the work done in the enforcement of the laws governing the manufacture and sale of substitutes for butter and cheese, and the law requiring milk inspection for cities of 10,000 or more population, together with a financial statement of the department. I also submit statistics covering all the different branches of the work, made as complete as my authority would permit. Each subject is treated in detail.

OLEOMARGARINE.

When the last annual report of this department was made there were twenty-four firms, located in ten cities of the state, holding United States government licenses (special tax) for the retailing of oleomargarine. During the previous year ending June 30, 1894, there were 103 such licenses held by retail dealers.

July 4th, following the above date the present anti-color law went into effect and the number of licensed dealers was reduced to twenty-four, mention of whom was made in my last report. That the oleomargarine people were unable to induce more to invest in these licenses is worthy of comment.

We communicated with and visited these parties, taking particular pains to inform and explain the requirements of the new anti-color law, the result being that while Iowa was

charged up on the internal revenue records with twenty-four retail licenses, there was but a very small quantity of yellow colored butterine being sold in the state. Those who have endeavored to sell the uncolored article have made an entire failure, demonstrating what the dairy people have always maintained and advocated, namely, that the butterine business was a fraud and that its only support and success depended upon the ability of the manufacturer, dealer and vender to practice deceit upon the public.

The people do not want white butterine. It is a perfect "give away" to the hotel, restaurant or boarding house that serves it. One of the largest grocers and provision dealers in Des Moines stated to us that in the fall of 1893 he handled large quantities of butterine and but little butter, but that the sale of white butterine for November, 1894, was but seven pounds, and since that time he had ceased to handle it. This has been the experience of the dealers in all the cities in the state where licenses were taken out, by being urged to continue the business through the efforts and influence of manufacturers and their agents.

NUMBER OF DEALERS IN IOWA.

At the beginning of the present United States fiscal year, the following letter was mailed from this department to all firms that had taken out licenses for the two preceding years, and was published by a large number of the daily newspapers of the state:

STATE OF IOWA,
OFFICE OF DAIRY COMMISSIONER,
DES MOINES.

To whom it may concern:

The special tax collected by the United States Internal Revenue department from all retail dealers in oleomargarine or butterine expires June 30, 1895, and the dealers continuing in the business, or entering it, are required to take out the United States government license on or after July 1st of each year.

This communication is intended to give information to parties interested, so that, in taking out this special tax, they will be made aware of the present law of Iowa governing the manufacture, sale and use of oleomargarine, or any substance designed to be used as a substitute for butter.

It came to my knowledge about a year ago that dealers were deceived, by agents representing the manufacturer of oleomargarine making false

representations, into taking out this special tax; whereas, if they had known the full meaning and intent of the state law, they would not have made application.

A copy of the Iowa law can be had upon application to this office, the purport of which is that no substance, designed as a substitute for butter, can be manufactured, sold or used in this state, providing it has a yellow color, or any shade of yellow.

This necessitates, if the goods are handled at all, their having a white or some color other than yellow. If such goods are handled, the dealer must comply with certain regulations governing their sale and use.

This law will have been in force by July 4, 1895, one year, and during this time this department has taken extra pains to have all interested become perfectly familiar with its provisions. All dealers continuing in or entering the business in this state must be considered as conducting the business with a full knowledge of the law.

W. K. BOARDMAN,
Iowa State Dairy Commissioner.

Dated at Des Moines, July 1, 1895.

This department watched the reports of the records from the internal revenue offices of the northern and southern districts of Iowa with much interest and anxiety, and have since received reports monthly from our local agents in Dubuque and Burlington.

It is with much gratification that we can say there is not a license held in the southern and but a single one in the northern district of the state. This license was issued on the 11th of September to S. M. Gorham, Dubuque, Iowa. Notice of issue was received at this office this following day and on the 13th of September the following letter was addressed to him:

LETTER TO LICENSED DEALER.

DES MOINES, Iowa, September 13, 1895.

S. M. Gorham, Dubuque, Iowa:

DEAR SIR—I am informed that you have paid the special United States tax for the privilege of selling oleomargarine or butterine, or in other words, that you have taken out the United States government license.

As there are stringent state laws governing the sale of oleomargarine, I deem it advisable to write you, so that you will fully understand to what requirements you must have to conform in the sale of butterine. Inclosed you will find a copy of the law governing this matter, and also, under another cover, the eighth annual report of this department. With the above enclosure you will also find a circular letter, which was sent on or about July 1st to all dealers previously holding government licenses.

You will gather from these documents that the manufacture, sale, or use of any imitation butter or cheese, having a yellow color, is absolutely prohibited in this state. In this connection, I will state that you must not be deceived by wholesale dealers who represent that they have an article that

resembles in color dairy butter, claiming that it is manufactured without the use of artificial coloring matter. Such an article is prohibited as much as if it was colored artificially, for the law is against the article having a yellow color or any shade of yellow. Cream color is defined as a shade of yellow.

There is no law against the sale of oleomargarine or butterine, providing it is not manufactured in imitation or semblance of genuine butter; therefore some manufacturers are making what would be termed "white goods," but in case such goods are sold, certain regulations must be conformed to.

I refer you to section 7 of the state law, which requires that each package sold shall be plainly marked in the English language, "substitute for butter;" also that the purchaser must be told that the article sold is a substitute for butter.

The manufacturer, as will be seen by section 4, must also brand the package "substitute for butter," and the retailer must not have a package in his possession without it being so branded.

These regulations you will notice apply only to a substitute for butter which has been manufactured without having a yellow or any shade of yellow color. This law will be rigidly enforced, therefore I write you at this length, so that you may be fully posted, and govern yourself accordingly,

Respectfully yours,
(Signed)

W. K. BOARDMAN,
State Dairy Commissioner.

This party has ceased to do business, having sold out; therefore the state of Iowa at the present time is free from an oleomargarine licensed dealer.

RETAIL DEALERS.

This result of a hard fought contest for the supremacy of honest butter in our state is decidedly satisfactory and encouraging to the dairy industry of Iowa. The change in the feelings and opinions of persons interested in this great industry has been wonderful during the past year. The honest operator has taken new courage, and the dairy press no longer admits that "oleomargarine has come to stay," as did some of the strongest dairy publications about a year ago. Oleomargarine may have come to stay, and a demand may be developed for it on its own merits, whatever they may be, but its days for masquerading before the public as fine creamery and dairy butter are nearly at an end.

The cleansing of Iowa from this illegal traffic in butterine was accomplished without much trouble to the retail dealer. In no

case was an arrest necessary. Visits were made to cities having licensed dealers, and where colored butterine was found the dealer was required to reship the fraudulent article to the manufacturer and furnish the dairy department with a railroad receipt or a bill of lading for the shipment; also agree to discontinue the handling of the illegal article. All the dealers selling the contraband article were only too glad to avail themselves of these liberal requirements, and they complied with them to the letter.

If there is any butterine or oleomargarine being sold in the state at the present time, it is in a small way and slyly done, and in absolute violation of both state and national laws. We doubt if it is being done.

ADULTERATION OF CREAMERY BUTTER.

The only prosecutions in this line of the department work that were made during the year were of considerable magnitude, and have become known over the entire country as the "Beyer" cases. At the time of the trial of Mr. Beyer the interest in this matter was great, and the following statement was prepared and given to the press:

THE BEYER CASES.

In making this statement, a brief history of the cases, together with Beyer's version, is given:

Edgewood is situated in Clayton county, close to the Delaware county line. At this place Mr. Beyer conducts a large general merchandise business. He also operates two creameries in Clayton county and one in Delaware. The creamery at Edgewood is called Fidelity; the one between Edgewood and Elkport, Bear Creek; the one in Delaware county is near Thorp, and is called Honey Creek.

A commission firm, A. F. Reiser, 415 New Market street, Philadelphia, has been receiving shipments from these creameries for some time. A party came from that city last spring for the purpose of instructing the butter-makers in the different creameries in the manner of making the butter into bricks and packing the same for shipment.

According to Mr. Beyer's story, there was more demand for this butter from his eastern connection than he could furnish; therefore he endeavored to increase his shipments by buying from other creameries near him, but he was unsuccessful in this, and so advised Mr. Reiser. Whereupon he received letters from Mr. R. proposing that the amount of butter be

increased by the use of June cold storage butter, mixing it with the cream in the churn, or with the butter on the worker. Mr. R. stated that the June goods could be bought in Philadelphia from Meyers & Co. After developments will show the result of these letters.

The first shipment of goods was billed to Edgewood, and from there distributed to the different creameries. The butter-maker at Honey Creek, and also Mr. Beyer, are positive that this shipment was genuine butter.

When these goods were received, Mr. Beyer read a letter to his butter-makers, purporting to be from A. F. Reiser, which contained instructions as to the quantity to be used and the manner of mixing this article with his creamery butter.

After this the goods were received at the other creameries direct; that is, the shipments were made to Elkport and Thorp. The goods in all cases were put up in ten-pound bricks, packed in sugar barrels, and marked and billed as butter, and consigned from Meyers & Co., Philadelphia, to Meyers & Co., at the various points in these counties. The invoices and bills of lading were always from Meyers & Co. to Mr. Beyer. These bills of lading would be presented at the railroad stations by some one connected with the creameries, and the barrels of oleomargarine hauled by them to the creameries.

Here the process of mixing took place, using, according to instructions, from 30 to 35 per cent of the foreign article in the compound. As near as I can learn, seventy-two barrels were received in all; thirty-five of these were on hand at the time of the seizure. The first was received the fore part of October, and the last shipment was at the Thorp depot at the time of the seizure November 23d. So it will be seen that thirty-seven barrels were unlawfully used. The adulterated article was made into bricks, packed in boxes and branded "Separator Creamery," preceded by the name of the creamery where the same was manufactured.

Meyers & Co. were paid by A. F. Reiser, who deducted the amount from the sales of the product when making his returns to Beyer.

Samples taken from the barrels from both Clayton and Delaware counties, secured by virtue of search warrants, legally issued, proved upon chemical analysis to be oleomargarine and containing no perceptible butter fat. The analysis showed the adulterated butter to contain from 30 to 35 per cent of this oleomargarine, with exception of the sample from Honey Creek, which showed an adulteration of from 15 to 20 per cent. This is probably accounted for by the butter maker explaining to me that there was a large amount of work connected with this process and that his work was heavy and time limited.

At Elkport, December 17th, I filed before George Kribbs, justice of the peace, informations against H. F. Beyer and his butter-makers, Messrs. Jones and Whipple, charging them as follows: First count, against all, for manufacturing imitation butter, and mixing with butter animal fats and other compounds, with the effect of producing an article having a yellow color and resembling genuine butter.

Second count, against Beyer and Jones: Having in their possession and under their control imitation butter and substances designed to be used as substitutes for butter.

Third count, against Beyer: Shipping imitation butter and substances designed to be used as substitutes for butter.

All of which are in violation of chapter 46, laws of the Twenty-fifth General Assembly.

D. D. Murphy appeared for the state. The defendants appeared and plead guilty, and the following fines were imposed: H. F. Beyer, on first count \$100, second count \$75, and third count \$50. Mr. Jones on two counts \$50. Mr. Whipple on one count \$50. These fines, including costs, amount to \$517.56, and were paid and the defendants discharged.

December 18th, at Manchester, Delaware county, informations were filed before C. Sanborn, justice of the peace, against H. F. Beyer and his butter-maker, Mr. Pollock. The charges against Mr. Beyer were the same as those filed at Elkport, and the charge of manufacturing and mixing was filed against Mr. Pollock. The defendants pleaded guilty, as charged, and the maximum fine of \$100 for each offense was insisted upon by the county attorney and was imposed by the court.

With the payment of these fines and costs, amounting to \$531.45, the defendants were discharged.

The total fines and costs of the cases in the two counties amounted to the sum of \$1,049.01.

The result of the first cases prosecuted under the new law will be satisfactory to all dairymen and others interested in pure dairy products.

It will be noticed that butter-makers are held responsible for the part they take in violating the dairy laws; therefore, knowing their responsibility they should refuse to have anything to do with work of this kind.

If there are cheese factories in this state using neutral in the manufacture of their product they should profit by the experience of Mr. Beyer and his employes and cease such illegal practice at once.

Notwithstanding Mr. Beyer's version in relation to the matter, from facts and information gained after careful investigation, I must believe that he knew he was manufacturing an illegal article.

The large number of samples of butter received by me since this exposure, from different parts of the state, requesting chemical analysis to be made of them, shows plainly how the people feel in regard to the adulteration of dairy products.

I am pleased to state that without an exception these samples have proved to be pure butter.

After the state department had finished these cases with Mr. Beyer, the revenue officers for the northern district of Iowa instituted action against him for manufacturing and wholesaling oleomargarine without a United States government license; also for having in his possession the above article not bearing the necessary internal revenue stamps. The government officials required him to take out a license and pay a fine, amounting in all to a large sum. The thirty-five barrels of oleomargarine found in his possession were seized and finally sold by the government to a Dubaque party to be used in the manufacture of soap.

Mr. Beyer's connection with parties in Philadelphia in this fraudulent transaction caused the government officials to further investigate the case, which resulted in the arrest of Alvin F. Reiser, a commission merchant of Philadelphia.

The Philadelphia Enquirer published the following account of the trial:

By far the most important oleomargarine case which has ever been brought to the notice of the authorities here is that wherein Alvin F. Reiser, a commission man, 415 New Market street was given a hearing yesterday before United States Commissioner Craig.

Henry F. Beyer, of Edgewood, Iowa, testifies that for several years he had been shipping creamery butter to the defendant. During September he received a letter from Reiser, saying he was going into a new business. Witness met defendant in Chicago, and the suggestion was made that cold storage butter be mixed with the creamery butter for the purpose of increasing the product of the creameries. During about five weeks 72 barrels, each weighing 155 pounds, were received by witness at Edgewood, and the contents of the barrels were mixed with the creamery product, at first in a 25 per cent ratio and afterwards 45 and then 50 per cent. Reiser charged up the barrel butter at 15 11-40 cents a pound and credited all the butter shipped at 214 cents. After the Iowa dairy commissioner discovered that the barrels contained oleomargarine, witness wrote to Reiser and received a dispatch signed F. K. Meyers, conveying instructions to at once re-ship barrels of oleo then in transit.

A couple of days later Reiser wrote witness, telling him not to trouble, as the goods had not been sold in the state of Iowa and that Meyers had left for Pittsburg, and the authorities would have to hunt for him. Witness shipped \$1,500 worth of butter to Reiser each week. When Reiser advised an admixture of 50 per cent, his letter was to the effect that the people of Philadelphia are poor and want cheap butter.

Lawyers Henry R. Edmund, W. C. Gross and James M. Beck appeared for the defendant, and United States District Attorney Ingham for the government. Mr. Edmunds cross-examined the witness in regard to samples given to the analytical chemist, and was very explicit in requiring from the witness some statement of knowledge that the barrels contained oleomargarine.

Dr. Leffman, analytical chemist, testified that the substance handed to him by the last witness was oleomargarine. William E. Van Arsdale, chief clerk of the Western Union Telegraph company, produced the original of a telegram signed F. K. Meyers, which was alleged by the prosecution to be the same handwriting as that of the defendant W. H. H. Bowen, a special revenue agent of Washington, testified that he went to the address of F. K. Meyers, produce agent, 513 North Eighth street, and found that the place was a small cigar store, where letter boxes are rented.

Miss Martha B. Power, 832 Parklomen street, the defendant's book-keeper, identified receipts signed by F. K. Meyers as having been filled out by her at Reiser's request. She had no knowledge of Meyers.

Mr. Ingham asked that Reiser be held for trial, and, despite Mr. Beck's vigorous statement that no evidence thus far could reach Reiser, and all

was against Meyers, the commissioner held the defendant for court in \$10,000 bail.

In closing the case, government officers said that the oleomargarine sold by the defendant often footed up to \$1,500 per week.

The final result of the United States case against Mr. Reiser has not come to my knowledge, but the wholesome effect of the lessons taught by these cases, both state and national, to manufacturers, butter-makers and commission men, together with the great good accomplished, can never be fully known.

WORK DONE AND RESULTS ACCOMPLISHED IN OTHER STATES.

The one great event that helped the dairy industry, and gave its supporters heart and determination to keep up the fight against the oleo fraud, was the decision of the United States supreme court, as rendered by Justice Harlan on December 10, 1894, in the case of Benjamin A. Plumley v. The Commonwealth of Massachusetts. This decision was rendered just in time to admit of its publication in full at the conclusion of our last report.

Some of the fundamental principles laid down in this now noted decision are of so much interest, and so sound, just and reasonable, a reprint is herein made:

NO MAN CAN CLAIM A RIGHT TO PERPETRATE A FRAUD.

The constitution of the United States does not secure to any one the privilege of defrauding the people.

It compels the sale of oleomargarine for what it really is by "preventing its sale for what it is not."

The statute seeks to suppress false pretenses and to promote fair dealing in the sale of an article of food.

While this case was pending in the higher courts, most of the states having anti-color laws were not aggressive in enforcing them. They had gone as far as they could, by reason of having cases of their own from the decision of which appeals had been taken. All seemed to be awaiting the final result in the supreme court, or the enactment by congress of the law known as the "Grout or Hill bill," the provisions of which were to give to the several states full control, after entering its borders, of oleomargarine, regardless of the original package decision.

The following states had anti color, pink color or prohibition laws at the time this decision was rendered: Connecticut, Delaware, Iowa, Maryland, Massachusetts, Minnesota, New

Hampshire, New Jersey, New York, Ohio, Oregon, Pennsylvania, Vermont, Virginia and West Virginia.

As soon as the decision was made known, most of these states commenced enforcement of their laws in earnest. Connecticut ordered Armour & Co. and Swift & Co. to discontinue the business in that state. The representatives of these firms had an extensive trade among the manufacturing villages of the state. Both firms took down their signs, called in their agents and shipped the supply of oleomargarine on hand from that territory.

In Cleveland and other Ohio cities arrests were made for selling colored oleomargarine. The wholesale dealers of Baltimore, in the state of Maryland, were notified by the produce exchange of that city to close up their places of business and cease the selling of oleomargarine. Pennsylvania, Delaware and Virginia, having prohibition laws, commenced a successful enforcement of them. In Pittsburg alone 250 cases against dealers were settled by the dealers paying all costs and agreeing not to sell butterine in the future. New Hampshire, Minnesota and West Virginia enforced their pink-colored laws, while our own state stopped the sale of the unlawful article entirely. This active warfare against this fraudulent business has been carried on almost from the day the supreme court decision was promulgated, and has reached from Massachusetts to California.

LEGISLATION IN OTHER STATES.

While such efforts were being made in states having satisfactory laws, those that were without or had insufficient ones on this subject were not idle. Many of the states in which the legislatures were to convene during the winter, and were without anti-color enactments, commenced work, resulting in most of them passing a thorough anti-color law. To the list was added Nebraska, through the efforts of its state dairy association, and Missouri, in spite of the opposition from the Kansas City oleomargarine manufacturers, board of trade and commercial club. The victory in Missouri was not gained without a thorough and persistent effort by the dairy people of that state. This addition to the list is very important, as St. Louis

was one of the largest markets in this country for oleomargarine, and Kansas City was another of considerable size.

On March 14, 1895, the governor of Wisconsin placed his signature to an exceedingly strong anti-color enactment. April 9th the California legislature passed a similar measure, and established a state dairy bureau consisting of three members. The bureau met and organized immediately after their appointment, and proceeded to discharge their duties. In correspondence with their secretary, he informed me, on October 9th, that but one government license had been issued in that state for the retailing of oleomargarine.

The sale of butterine in Los Angeles and San Francisco has been large in the past. California's prompt action in enacting stringent laws and providing for their enforcement is of no small importance to the dairy states. The Pacific coast states have been large consumers of Iowa dairy products, and, until this industry is further developed in that territory, a demand will still exist for our goods. The states of Tennessee, Washington, Colorado and Maine have also joined the procession.

FAILURE IN ILLINOIS.

The one great failure that the dairy interests met with in the last winter's campaign was in not securing the greatly desired anti-color law in Illinois. The dairymen and creamerymen (with a few exceptions) of that state and the Chicago produce exchange did great work, and made a fight which deserved success. They had the necessary votes, and would have carried the measure through the senate—it having passed the house—but, by a parliamentary trick, a vote on the measure was prevented.

The magnitude of this defeat is apparent when you consider that Illinois manufactured during the fiscal year ending June 30, 1894, over 40,000,000 pounds of oleomargarine of a total reaching nearly 70,000,000 pounds made in the entire country. The following table shows the different states where this large amount was manufactured during the year above referred to:

State.	Pounds.
California	173,613
Connecticut	8,545,296
Illinois	40,967,122
Indiana	1,460,861
Iowa	112,426
Kansas	10,102,185
Missouri	1,136,835
Nebraska	3,476,350
Ohio	2,670,825
Pennsylvania	676,733
Total	69,622,246

The great value of the Harlan decision and the legislative enactments referred to in this article will appear upon careful examination of this table. Anti-color laws now exist in all the states named in this list except Illinois, Indiana and Kansas.

The dairy interests of this state and country feel the importance and absolute necessity of having Illinois join with the other states by passing such laws as will make it possible to stamp out and rid the country of this gigantic fraud.

DECREASE IN THE MANUFACTURE OF OLEOMARGARINE.

The great work done by the combined efforts of the states mentioned has had a perceptible effect upon the make of oleomargarine during the last fiscal year. There was a decrease in the output reaching 126,166 tubs in Chicago alone during this period, as compared with that of the previous year. Later reports show a much larger per cent of decrease, since the new laws enacted last spring and winter, by several of the states, have become operative. In the state of Massachusetts there has been a perfect revolution, and the decrease is very marked. The following from one of the leading agricultural papers gives the facts:

Figures that talk, are given in the table below, remarks the American Agriculturist. It shows that the receipts of butter at Boston during the past three months have increased 20 per cent over the amount received and sold in that market during the like period last year. Meanwhile the receipts of oleo fell off 80 per cent. This is the result of an efficient enforcement of the Massachusetts dairy law since its constitutionality was sustained by the United States supreme court. That law was obtained only after a five years' fight on the part of the farmers, who, in addition to the grange, finally had to organize the farmers' political league and turned the state upside down politically before they could get a legislature true to the people's interests. The following official figures are eloquent in showing what is done in a state where hog butter can only be sold for what it is:

RECEIPTS AT BOSTON.

Month.	Butter, lbs.		Oleo, tubs.	
	1893.	1894.	1893.	1894.
June	7,694,356	6,874,929	2,452	10,575
July	7,056,554	5,387,548	1,187	10,538
August	4,700,021	3,855,110	983	11,778
Total	19,450,931	16,117,587	4,622	32,891

It will be seen from the above that while the receipts of butter for these three months has increased 20 per cent, as compared with the receipts for the same time last year, the receipts of oleo have fallen off 86 per cent. This is exceedingly encouraging, and what might have been expected. The farmers in every state of the union that does not have a law of this kind will need to organize before they can secure it. The fight against oleo is not merely a state but a national fight and even international, and nothing but the most resolute effort in securing the enactment of laws, and after that their enforcement, will protect farmers from this parasite on legitimate industry.

UNITED STATES GOVERNMENT'S IMPORTANT REGULATIONS.

On October 23d the commissioner of internal revenue issued an order of great importance to the dairy industry and a hard blow to oleomargarine. The order prohibits the use of such words as "Butterine," "Jersey," "Silver Churn," or any trade mark, label, picture, illustration or other advertising or descriptive devices that suggest a connection of the product in any way with the cow, the dairy or the creamery. The order is as follows:

REGULATIONS.

TREASURY DEPARTMENT,
OFFICE OF THE
COMMISSIONER OF INTERNAL REVENUE,
WASHINGTON, October 22, 1895.

To Collectors of Internal Revenue:

It having come to the notice of this department that certain manufacturers of oleomargarine, who export that product, encroach upon the law in the use of private trade-marks, brands, labels, picture illustrations, and other advertising and descriptive devices, placed upon the tin or other inner package devices for separating lumps of oleomargarine inside the manufacturers' original packages for exportation, the commissioner of internal revenue, with the approval of the secretary of the treasury, hereby establishes regulations as follows, under authority contained in section 16, act of August 2, 1886.

Hereafter no trade-mark, label, brand, picture illustration, or other advertising or descriptive device will be permitted to be used upon the tins or other inner package devices of manufacturers' original packages of oleomargarine for export, which, in anywise conceal the government brand "oleomargarine," required under section 16 of the act of August 2, 1886, to be branded upon all packages of oleomargarine for export.

No such trade-mark, label, brand, picture illustration or other advertising or descriptive device shall be placed upon the tins or other inner package devices in such juxtaposition to the government brand, "oleomargarine," as to overshadow or confuse that notice as to the nature of the contents of the tins or other inner package devices. Nor shall it be permitted to use upon such tins or other inner package devices any trade-mark, label, brand, picture illustration, or other advertising or descriptive devices, which, in anywise indicates or is calculated to induce the belief that the contents are anything else than oleomargarine. The government brand, "oleomargarine," must stand conspicuously by itself.

No trade-mark, label, brand, picture illustration, or other advertising or descriptive device, prohibited as above, for use upon the tins or other inner package devices, shall, in any other form, be inclosed in the manufacturers' original package containing the tins or other inner package devices.

The use of the word "butterine," in branding tins or other inner package devices of oleomargarine is prohibited by law.

Section 2 of the act of August 2, 1886, prescribes that "butterine" shall be known and designated as "oleomargarine."

Under the foregoing instructions it will be seen that the use of any trade-mark, label, brand, picture illustration, or other advertising or descriptive device, representing a cow, or dairy farm, or in any other form indicating the contents of the tins, or any other inner package devices to be a product of the dairy, or calculated to induce the belief that it is such product, is inadmissible.

Advise the manufacturers that hereafter the employment of any trade-mark, label, brand, picture illustration, or other advertising or descriptive device, which has not first received the approval of this office, will be at their own risk.

Collectors will furnish manufacturers and exporters of oleomargarine in their respective districts with copies of these regulations immediately upon their receipt, and see that strict compliance is had with their provisions.

JOHN G. CARLISLE,
Secretary of the Treasury.

JOHN S. MILLER,
Commissioner.

This ruling is only second in importance to Justice Harlan's decision, and would indicate that the national government has finally awakened to the importance of the great dairy industry, and is willing to give the people all the protection possible under our present laws.

These regulations were brought about in part by the active work of a committee appointed in the spring of 1894, by the

New York Mercantile exchange to look into the question of the exportation of oleomargarine. The facts, as found by them, are contained in an article written by J. A. North, of New York. This article was given to the press throughout the entire country, and the same subject was ably discussed at the meeting of the national dairy union, at Washington, D. C., last January. The departments of agriculture and treasury had their attention called to the violations of the national law in respect to the manner in which the export business was being conducted. The facts are not well known, and the question is a most important one for the butter interests of this country, therefore we reproduce Mr. North's article in full at this time.

EXPORT TRADE IN BUTTER.

HOW IT IS BEING DESTROYED.

In the New York Journal of Commerce and Commercial Bulletin of January 17, there appeared an article compiled from custom house reports showing the increase of oleomargarine for export up to January 1, 1895, to be 1,250,000 pounds over the previous year. As there is but little manufactured oleomargarine or butter exported in tubs, the increase necessarily comes under the head of exports to tropical climates, and to those unacquainted with this business of packing butter for tropical climates, it would seem as if natural butter was being seriously crowded. The facts are the reverse of this. The increase of the exports of oleomargarine is nominal and "75" per cent of all the oleomargarine cleared from the custom house is shipped from this port branded in terms signifying butter and consumed as butter in foreign countries, and it is rarely a lot of oleomargarine is exported from the port of New York with the intention of being shipped as oleomargarine or branded oleomargarine. The clearances through the custom house are as oleomargarine as that is a necessity on the part of the shipper to get the rebate on the internal revenue tax, for without said clearances as oleomargarine the tax is forfeited.

All butter shipped to tropical climates is packed in tins of various sizes, ranging anywhere from one pound to twenty-five (25) pounds.

Under the laws of the internal revenue department pertaining to the exports of oleomargarine from 1886 to 1891, oleomargarine was sent to the tropical climates in an experimental way and in sample lots branded as oleomargarine on both cases and tins and was being introduced as a substitute for butter with but little success.

On July 9, 1891, the oleomargarine men prevailed upon Mr. Mason, the commissioner of internal revenue at Washington at that time, to rule that

the case in which the tins of oleomargarine were packed was the *package* referred to in the law, and just as soon as this interpretation of the law was given the oleomargarine exporters ceased to brand the tins oleomargarine and branded them butter and the outer case oleomargarine, and from that time until the spring of 1894, 90 per cent of all the oleomargarine cleared from the custom house for foreign markets had the cases branded oleomargarine, and the contents, the tins, branded as butter with all the favorite names under which the various grades of butter are known, such as Western Dairy, Suffolk Creamery, Garden City Creamery, Empire Creamery, and during these three years the increase of the shipments of this fraud was something enormous.

In the spring of 1894 a committee was appointed by the New York Mercantile exchange to look into the exports of oleomargarine, and found the facts to be as reported above; that outside of the clearance of oleomargarine there was no regard paid to the law, and all of the exports were branded *butter*. The committee waited upon Mr. Miller, the commissioner of internal revenue at Washington, called his attention to these abuses, gave him proofs that the statements of the committee were correct, and he ruled that the case was *not* the package referred to in the law, but the tins were, and that oleomargarine exporters and manufacturers must cease branding their goods butter, or any name that inferred butter in any language of the islands or countries for which the goods were intended, such as "burro" for goods intended for the French West Indies islands, and "mantquilla" for goods for the Spanish islands and South American countries, but he did not rule that they must brand it as *oleomargarine*, nor has he so ruled up to this time, and large quantities of oleomargarine are being shipped, marked with the favorite terms by which butter is known, such as "Fancy Goshen," "Extra Elgin Creamery," "L. X. L. Dairy" and other marks that signify butter and nothing but butter, and these goods are leaving this port so marked this week, the entire inference of said package being butter. In some cases the tins are entirely blank, with no mark whatever upon them, while the case is branded oleomargarine and butter labels are sent by express or mail to ports of destination and put upon the goods where they reach the consumer as butter, and for which they pay a butter price and believe they are buying butter.

This committee has bought through commission houses in New York, of oleomargarine manufacturers, oleomargarine in tins packed in cases to be branded as butter, the bill to be rendered as butter, when it was known and understood by all concerned that the goods were oleomargarine. A tin was taken out of such a purchase and sent to Mr. Miller at Washington as an evidence that such a fraud was going on, and for some reason the manufacturer who put up these goods has not yet called for his pay for that bill, which is now nearly a year old.

The steamship "Schleswig," which cleared from New York for five West Indies ports, had on board consignments of oleomargarine packed in cases in which the tins were without any mark, either of butter or oleomargarine. Mr. Brooks, the inspector in New York, was asked why he allowed these goods to pass when they came under the law, and his reply was that he had no instructions to detain them, but had written to Washington for instructions.

Shipments of oleomargarine as butter to Venezuela became so great and the fraud so bare-faced that that government has finally refused to issue a consul's certificate for any oleomargarine or butter shipped to its ports without a chemical analysis and an affidavit as to the contents of the cases. This was brought about by the Venezuela merchants protesting against the fraud that was being perpetrated upon them, and natural goods have suffered in consequence, as they believe throughout Venezuela that American butter is all adulterated and a fraud, and shipments to that country for the last eight (8) months have been nominally nothing.

Mr. Mendonca, the Brazilian minister at Washington, has requested that this committee notify him of all clearances of oleomargarine to Brazilian ports, which this committee has undertaken to do. It certainly seems an outrage that a country consuming as many of American goods as Brazil does that the government of the United States does not protect its export business and not make it necessary for a local committee to be called upon to protect a country like Brazil against the oleomargarine fraud.

The committee has written a great many islands and countries asking for their regulations in regard to oleomargarine and we have innumerable answers saying that oleomargarine is not handled in these countries and islands, when the custom house clearances at New York show the same islands to have been the destination of exports of oleomargarine for years past, and this fraud is consummated at those ports by the interpretation of the internal revenue laws here that were meant and enacted to protect legitimate commerce.

Some time since the brig "Pearl" left New York cleared with one hundred (100) cases of oleomargarine for St. Croix. On arrival the goods were entered at St. Croix as butter, and this committee bought of that consignment oleomargarine branded L. X. L. butter and had the package returned to the United States as evidence for the internal revenue department.

It is certain, without something is done, that the legitimate dairy interests are in jeopardy. It is the duty of all those interested in dairy products to bring to bear what weight they may have to overcome this illegitimate export business, and that oleomargarine shall be forced to be branded *oleomargarine*, whether for home consumption or for export; but when you send to South America and West Indies Islands an article they do not buy, colored in the nature and semblance of butter, branded in the terms that indicate butter, and give them a manufactured article and they consume that article as butter, paying the price of butter for it because it bears the nature and semblance of butter, it is time that it was stopped.

If something is not done by the present administration in regard to our dairy business, so far as exports to tropical climates are concerned, is a thing of the past.

What this committee is endeavoring to do is to bring about an interpretation of the law as it existed prior to Mr. Mason's decision of July 9, 1891, when it was imperative for a buyer who wanted oleomargarine to buy it for what it was and have it so branded, and not buy as to-day oleomargarine and be able to have it branded in terms indicating butter.

The result of this fraud in the Spanish islands has been an enactment of a law prohibiting its merchants from importing oleomargarine.

The importations of butter into Brazil are \$6,000,000 annually, and into Rio Janeiro \$2,500,000, and since the introduction of oleomargarine the prejudice against our butter has become so great that our exports to Brazilian ports for the past year will be less than ever before, barely reaching \$100,000. South American countries are now sending their butter orders to Denmark, that government guaranteeing the quality and purity of its goods, and a purchase in a Danish market means to the buyer a delivery of what he pays for.—*J. A. North.*

REASONS FOR CONGRATULATION.

It was a mistake and a great disappointment for Illinois to fail in her legislative efforts; the great source from which the fraudulent traffic in all its phases is supplied still exists. Notwithstanding this, the people interested in the dairy industry and pure food are to be congratulated on the advancements made during the past year. The decision of the United States supreme court, the many new laws passed, the active enforcement of all laws, and the final coöperation of the treasury department in the prevention of fraudulent practices, should reasonably satisfy our people that the year has been one of progress.

Those most interested must understand that the contest is still on, and there must be no relaxation of efforts against all frauds and adulterations. The state departments and state associations having the enforcement of state laws in charge must be loyally sustained. The national organizations and produce exchanges of our large cities should continue to force the fight in every way, and every direction possible. Our foreign markets should be regained and the confidence in our dairy products once more established.

FILLED CHEESE.

I had the honor, by appointment from the Iowa dairy association, to represent the state at a meeting of the national dairy union, held at Washington, D. C., January, 1895.

It was about a month previous to this meeting that the supreme court decision, now known as the Harlan decision, was

made, and in the minds of the delegates this opinion from the supreme court of the United States doomed oleomargarine for all time. Nevertheless congress was still urged to give the dairy interest the additional security contemplated by the "Grout bill," as previously referred to. The union naturally and properly gave its attention in a large degree to the subject of filled cheese. The dairy commissioner of Iowa went on record at that time in favor of putting filled cheese under the same government revenue laws, the same restrictions that are thrown around the sale, manufacture, and use of oleomargarine. The necessity of such enactments seemed at that time to be essential in assisting states opposed to the traffic in the enforcement of their laws regulating it. Developments in our own state during the past year show conclusively that this position was well taken.

Delegates from Wisconsin, New York, and Chicago were determined and deeply in earnest regarding this question. The national dairy union again properly placed itself on record as against filled cheese and in favor of asking congress to class it with oleomargarine, by enacting laws that will protect the public against impure and adulterated cheese.

On my return home, the few hours I spent in Chicago convinced me that the extent of this fraudulent traffic had in no way been over-estimated.

INVESTIGATION IN IOWA.

I concluded to investigate and ascertain whether this fraud had gained a foothold in our state, and in that event do all in my power to put a stop to its manufacture and sale within my jurisdiction. To this end the following circular was issued:

DES MOINES, Iowa, February 27, 1895.

GENTLEMEN—I have been informed that, in connection with your other business, you handle cheese. If I am rightly informed, this letter should be of material interest to you. In sending you this communication I have two objects in view; one to give you such information as may be of benefit to you in connection with this branch of your business; the other that, with your assistance, the public may be better protected against the consumption, unknowingly, of filled or adulterated cheese.

It is a known and admitted fact that at the present time more than 20 per cent of the cheese manufactured in America is adulterated, or what is commonly termed "filled." This so-called filled ranks to the first-class cheese as does oleomargarine or butterine to butter. It is manufactured from skimmed milk, with lard and other ingredients added to take the place of the butter fat that has been abstracted from the whole milk.

This class of so-called cheese is now being forced upon the jobbers of this state wherever it is possible to accomplish a sale, or induce the dealer to handle the spurious article on commission. The true character of these goods may or may not be known to the jobber receiving them, but the law does not recognize this feature as a defense, as it presumes that the true character is known to the party controlling them.

Where deception is practiced by the manufacturer or commission merchant, prices are named for these goods that correspond with the value of genuine cheese, they knowing that if their true value was quoted sales would not be made, for buyers would be suspicious of their genuineness.

It is to be supposed the jobber purchasing them, knowing their true character, receives them at a much less price, and by disposing of them as "full cream" to the unsuspecting retailer, at high prices, realizes large profits from the unlawful transaction.

The manufacture, sale and use of any substitute for cheese, having a yellow color, or any shade of yellow, is prohibited, and any violation of this provision is punishable by heavy penalties. On pages 7 to 17, inclusive, of the enclosed pamphlet will be found the law relating to this subject. Sections 2 and 3 of this law define imitation cheese and prohibit its manufacture, sale and use. Other sections of this law provide for the manufacture and sale of substitutes not manufactured in the semblance of cheese.

I request you to become familiar with the provisions of this law, as this department will do all in its power to rid the state of this undesirable and fraudulent article.

In this undertaking I look for co-operation and assistance from all honorable dealers. If you will but stop to consider the great damage this traffic will cause to the dairy interests of our state and country the danger of injuring the health of its people and the reduction in the sale and consumption of cheese, caused by loss of confidence in the pure character of and goods offered, I feel certain that you will be equally interested with me in the suppression of this illegal business.

It is expected that upon receipt of this you will convince yourself of the genuineness of all cheese in your possession, even if a chemical analysis is found necessary to so determine, and if any of the illegal article is found it should at once be returned to the parties from whom it was obtained, and in making future purchases only parties who can be relied upon to furnish nothing but genuine cheese should receive your orders. In determining the quality of the cheese do not depend on the marks, for it is the practice of those handling these "fills" to use brands corresponding to those adopted by the manufacturer of full cream cheese. With confidence that this letter, and the sentiment herein expressed will meet with your hearty approval, I remain,

Yours respectfully,

W. K. BOARDMAN,
State Dairy Commissioner.

This circular letter was mailed to all the wholesale jobbers of groceries, commission and produce dealers in the state. Replies were received from the following:

Charles Hewitt, Des Moines.
Warfield, Howell & Watt Co., Des Moines.
Layman Cold Storage Co., Des Moines.
C. C. Prouty Co., Des Moines.
Mason City Grocery Co., Mason City.
Letts, Spencer, Hoffman Co., Mason City.
Belderbecke, Millier Co., Davenport.
J. F. Kelley & Co., Davenport.
Van Patten & Marks, Davenport.
H. L. Spencer Co., Okaloosa.
John Hancock & Sons, Dubuque.
M. M. Walker Co., Dubuque.
Mehlhop, Son & Co., Dubuque.
Schroeder-Kilias Co., Dubuque.
Letts-Fletcher Co., Carroll.
Groneweg & Schoentegen, Council Bluffs.
Bicklen, Winzar Grocery Co., Burlington.
Letts-Fletcher Co., Marshalltown.
The Fowler Co., Waterloo.
Smith, Lichty & Hillman Co., Waterloo.
The George Hammer Mercantile Co., Iowa City.
Tolerton-Stetson Co., Sioux City.
C. Sheckberg Co., Sioux City.
M. E. Fisher, Red Oak.
Fort Dodge Grocery Co., Fort Dodge.
J. H. Merrill & Co., Ottumwa.
Webster City Grocery Co., Webster City.
Witwer Brothers, Cedar Rapids.
I. H. Shaver Cheese Co., Cedar Rapids.
T. M. Gobble Co., Clinton.

The answers to this circular letter were prompt, frank and instructive. Many thanked me, offered assistance, co-operation and support. Some said they bought none but Iowa goods, giving the names of the factories, and expressing confidence in the purity of Iowa productions. Others stated that they handled only full cream cheese. Many deplored the manner in which cheese is being adulterated, and hoped the department would be able to rid Iowa of the miserable truck which was being received from Chicago and other points. Others stated they would buy none unless guaranteed, and some would have their cheese analyzed from time to time as it was impossible for a dealer to know whether goods were adulterated or not. The following letter is a fair sample as to general tone:

OSKALOOSA, Iowa, March 7, 1895.

W. K. Boardman, State Dairy Commissioner, Des Moines, Iowa:

DEAR SIR—Referring to your circular letter, received some days since upon the subject of "adulterated, or filled" cheese, we desire to thank

you very kindly for the information imparted, and in this connection beg to assure you of our most careful and hearty co-operation in this direction, and to the end of accomplishing the very desirable result to which you refer.

In the event you are at any time this way we shall be very glad to have a call from you. In the meantime we are with great respect,

Yours truly,

(Signed)

H. L. SPENCER CO.

The following letter expresses a need that I have met with in this work, and one that should be removed if effective results are to be expected:

DUBUQUE, Iowa, March 19, 1895.

W. K. Boardman, State Dairy Commissioner, Des Moines, Iowa:

DEAR SIR—Your favor of March 16th at hand. We are sorry you can not give the samples of cheese sent you an analysis, for we should like to know their true character; however we have no hesitancy in saying that we believe they are strictly full cream and pure goods. The parties from whom we buy them guarantee them to us as being such, and are willing to stand behind us.

We note you say your department has not sufficient appropriation to warrant you in analyzing any cheese except that which is seized for the purpose of demonstrating whether the law has been violated. We think this is very unfortunate, for the state had ought to assist those who are desirous of handling only pure goods and we think sufficient appropriation ought to have been made to permit the office to examine the samples sent to them. We believe this is what the state of Minnesota does. At all events we know that when we sent some vinegar to them some time ago to analyze, they did so very cheerfully, and we think your department ought to be placed in the same position, for it ought not to be incumbent upon parties handling goods to have them analyzed when there is a department in the state for that purpose. With kindest regards, we remain

Yours very truly,

(Signed)

J. F. HANCOCK & SONS,

JOBBER'S RESOLUTION OF ENDORSEMENT.

March 7th the following communication was received:

MARSHALLTOWN, Iowa, March 7, 1895.

W. K. Boardman, State Dairy Commissioner, Des Moines, Iowa:

DEAR SIR—The letter you recently wrote to Messrs. Hancock & Sons, of Dubuque, was brought before a meeting of our state jobbers, held in that city on the 28th, and the following motion unanimously adopted: That the secretary be instructed to write Mr. Boardman, that it is the sense of the

convention that the movement set forth in his letter is in the right direction, and that we will assist him in every way possible to have the law enforced; and we hereby pledge ourselves not to handle any "filled cheese."

Will you kindly give me such instructions that we may fully understand just how to detect these "filled or adulterated" cheese, and I will notify our members? Yours, very truly,

(Signed)

F. C. LETTIS,
Secretary.

It was most gratifying to find the wholesalers, jobbers and commission men so thoroughly in accord with this department in this work. Some complained very bitterly on account of the retailer being supplied with filled cheese from other states. This led to the issue of the following circular to the retail trade:

TO RETAILERS OF CHEESE.

February 27th this department addressed a circular letter to all jobbers and commission-merchants handling cheese in this state. The object of this letter being to inform these dealers to what a great extent "filled" or adulterated cheese was being manufactured in America, and also to explain the law regulating the manufacture, sale, and use of "filled" cheese in this state.

In the above mentioned letter I made the statement that it was a well known and admitted fact that at the present time more than 20 per cent of the cheese manufactured in America was adulterated, or what is more commonly termed "filled." This so-called "filled" ranks to first-class cheese as does oleomargarine or butterine to butter. It is manufactured from skimmed milk with lard and other ingredients added to take the place of butter fat that has been abstracted from the whole milk.

The law prohibits the manufacture, sale and use of imitation cheese* and any substitute for cheese having a yellow color or any shade of yellow, and provides heavy penalties for all violations of these provisions.

In the letter to all jobbers and commission-merchants I requested their co-operation and assistance in the suppression of this illegal business.

At a meeting of the Western Wholesale Grocer's association, held in Dubuque, February 28th, a resolution was unanimously adopted endorsing the movement, as set forth in my letter, and pledging themselves not to handle any "filled" or adulterated cheese.

Numerous letters have been received from jobbers in all parts of the state, showing that they are interested and anxious to have this law enforced. But they realize the fact that the honest retailer can be deceived by receiving these goods from Chicago and other jobbing centers outside of the state, and in this way the outside jobber places his fraudulent goods in direct competition, at a slightly reduced price, with the genuine article handled by the honest Iowa jobber.

*Section 2, chapter 46, laws of the Twenty-Fifth General Assembly: Provided, that the use of salt, rennet and harmless coloring matter for coloring the product of pure milk or cream in the manufacture of butter and cheese shall not be construed to render such product an imitation.

It will readily be seen that the retailer has an important part to perform in crushing and stamping out this monstrous fraud. From a humane standpoint alone he should be willing to do all in his power to attain this end. From a business point of view he is directly interested, for he should at all times sell cheese that will induce the consumer to repeat and enlarge his orders, in place of giving him that which destroys his appetite for this desirable article of food.

The law contemplates that you shall know the true character of all cheese you sell or have in your possession and holds you responsible for its genuineness. It, therefore, devolves upon you to place your orders with parties who can be relied upon to furnish none but genuine cheese.

It is the intention of this department to do all in its power looking to the suppression of this fraud, and it is earnestly desired that the retailer, as well as the jobber, will co-operate with the department in its efforts to rid the state of "filled" and adulterated cheese.

Respectfully,

W. K. BOARDMAN,
Iowa State Dairy Commissioner.

Dated at Des Moines, Iowa, April 4, 1895.

In order to give the matter publicity and reach the retail dealer, the following request was made of all the newspapers, both of daily and weekly publication, numbering about one thousand Iowa papers. As in all other cases when requests have been made, the state press most generously responded:

DES MOINES, Iowa, April 4, 1895.

To the Editor:

DEAR SIR—The public is justly entitled to protection from the fraud that is now being perpetrated throughout the state by the sale and use of "filled" or adulterated cheese.

This is an agricultural state, and dairying being one of its most important industries, all should be interested in suppressing any illegal practice detrimental to it.

Knowing of no better way of reaching the retail dealer than through the columns of the press of the state, I earnestly request you to publish this article in full at as early a date as possible, and oblige,

Yours very truly,

W. K. BOARDMAN,
Iowa State Dairy Commissioner.

I also sent the following to the wholesalers and jobbers:

DES MOINES, Iowa, April 4, 1895.

GENTLEMEN—The inclosed circular has been sent to all newspapers in this state, with a request that the article be published. Through this medium I am in hopes of reaching a majority of the retail dealers in cheese.

Please read this article, and if you desire your Iowa customers to have a copy, I will be pleased to furnish the number needed, free of expense to you, other than express charges.

In order to accomplish this it will be necessary for you to acquaint me with the number needed by return mail.

Very truly yours,

W. K. BOARDMAN,
Iowa State Dairy Commissioner.

In response to this letter, the department sent out 25,000 circulars for distribution among the retail trade.

THE CHICAGO CASE, AND FILLED CHEESE ANALYSIS.

About the time this circular was reaching the trade, Charles E. Shedd, a retail grocer of Nevada, called my attention to a cheese purchased on March 4th, of a wholesale grocer of Des Moines. Part of the cheese had been sold by him, but did not give satisfaction to his customers. It became dry and hard soon after being cut, and in other respects was not the kind of a cheese that suited his trade. It was billed to him as "Durham Flat." I took a large sample of this cheese, marked it "Sample No. 21, from C. E. Shedd," and placed it in the hands of Prof. J. B. Weems, professor of agricultural chemistry, and chemist of the experiment station of the Iowa Agricultural college, Ames, Iowa.

The following is his report of the analysis of this sample.

AMES, Iowa, April 6, 1895.

Hon. W. K. Boardman, Dairy Commissioner, Des Moines, Iowa:

DEAR SIR—Mr. Helleman has just finished the analysis of the sample of cheese No. 21, with the following results:

Condensed	26.11 per cent.
Water	28.71 per cent.
Fat	29.19 per cent.
Volatile acids in 5 grams of fat in terms of $N a O H n / 10 \cdot 3 \cdot 13 \text{ c.c.}$	
Insoluble fatty acids	30.18 per cent.
Saponification equivalent	217.5 $m g K O H$.
Iodine absorption	51.35 per cent.
Melting point	31.5°.

Microscopic examination showed that no butter crystals were present, and presented an oleo field.

From the results it is seen that the cheese is adulterated by having the butter fat removed and replaced by a mixture of other fats not butter fat; or, in other words, it is a "filled cheese."

Yours very respectfully,

J. B. WEEMS.

After receiving his report, I called upon the Des Moines merchant, and he willingly gave all the information in his possession. He admitted receiving a mail order from C. E. Shedd, on or about March 4, 1895, and that he shipped, on the 5th day of March, one box of "Durham Flat," consigned to Mr. Shedd. He stated he bought this cheese, with others, from a large Chicago firm on the representations made on a postal card, which were as follows:

CHICAGO, February 6, 1895.

GENTS—Here is a special out on cheese. Send us your orders; we can save you money. We offer you fancy, late-made, mild, full-cream cheddars, twins, singles, and Young Americas, 7c; also, those 20-lb. cheese, 7c. Send us your orders; we guarantee satisfaction.

Yours truly,

His letter ordering the cheese was plain, specific, as to the quality of cheese wanted. It is here given:

DES MOINES, Iowa, February 7, 1895.

Chicago, Ill.:

GENTLEMEN—We have your favor of the 5th, also postal card of the 6th, quoting favorable price on cheese. We have decided to give your cheese a trial, and if you can ship us in Rock Island refrigerator car, weather being favorable, 25 boxes each Single Plate and Young Americas, fancy, late-made, mild, full-cream cheese, you may do so, and if they prove satisfactory we shall be able to give you considerable business. Otherwise we will expect you to fulfill your guarantee of the satisfactory condition of this lot.

Yours very truly, (Signed)

With the assistance of the merchant, a thorough examination of his entire stock of cheese was made, and but seven boxes of this purchase were found in stock. The balance of his cheese was of Iowa manufacture. The dealer, without the least hesitancy, gave me access to all his books, bills and correspondence connected with his cheese business.

I became thoroughly convinced that he had been deceived, relying upon the commercial standing and the guarantee of the Chicago parties, and decided in my own mind not to prosecute this case.

I ordered him to ship the balance of the consignment to the Chicago dealers. He promptly complied, as shown by the following letter:

DES MOINES, Iowa, April 18, 1895.

W. K. Boardman, Dairy Commissioner:
DEAR SIR—We have shipped seven boxes of cheese to Chicago, as per copy of invoice and bill of lading herewith enclosed. We also enclose our letter to this firm, which we hope will be satisfactory to you. You will see from enclosed statement that this is the only cheese we have purchased outside of Iowa since July, 1894, and as we have handled 1,000 boxes and upwards during this period, you will notice we have been as loyal to the Iowa manufacturers as any other jobber in the state.

We regret very much that we should have been imposed upon by these parties on this shipment, and assure you, if we had not supposed the cheese to be everything that was represented, we would not have sold a box to our trade. If you wish any other items pertaining to this business we have

done in Chicago, we will be pleased to send them to you, or would be glad at any time to have you call at our place of business and have an interview with you. Very truly yours,

(Signed)

The following is a copy of his letter to the Chicago firm, together with their answer:

DES MOINES, Iowa, April 18, 1895.

Chicago, Ill.:

GENTLEMEN—We are shipping you to-day, via C. M. & St. P. R. R., seven boxes Young America cheese, from lot purchased from you early in February. When we gave you this order, it was with the understanding, as per your letter, that you would ship us first class full cream stock. We so stated in our letter to you, to which we will ask you to refer. We said distinctly that we did not wish anything but full cream goods. We only learned recently that you did not ship us this quality of cheese. We find, on investigation, that one of our customers received one of the cheese you shipped us, and it did not please him. He was suspicious that it was not all right, and had it examined by a responsible chemist, who found it was a filled cheese, with not a particle of cream or animal matter. We enclose herewith invoice, and will ask you to place the amount to our credit.

Very truly yours,

(Signed)

CHICAGO, Ill., April 20, 1895.

Des Moines, Iowa:

DEAR SIR—Yours of the 18th is at hand and noted. We are quite surprised at your letter. Now you or your customer, whoever it is who claims to know, never were so mistaken in their lives, when they pronounced these goods filled goods that we sent. They certainly are not, and we are ready to furnish affidavit that they are not. They are made from pure cows' milk, with no adulteration. We have all the respect in the world for the responsible chemist that you refer to, but we doubt very much whether your customer ever had the cheese examined, but merely assumed that to bolster up his cause for complaints, for what we know to be otherwise stands undisputed. Yours truly,

(Signed)

At the time I was investigating this case I visited other wholesale cheese dealers of Des Moines and other cities. One of the Des Moines dealers had mailed an order for full cream cheese to the same Chicago firm referred to in this case. Correspondence was as follows:

CHICAGO, April 17, 1895.

GENTS—We offer you fine, new, full cream cheddars at 6c, twins 6c, singles 5 & 1-4c Y. A's 7c, all cheese made of pure milk. Send us an order; we guarantee satisfaction. Yours truly,

(Signed)

CHICAGO, April 20, 1895.

DEAR SIRS—Yours of the 18th is at hand and noted. We have entered your order for cheese and will ship at once; will send you some fine goods. We note what you say in regard to quality, you need not fear, we will care for that. Pure cows' milk goods and strictly finest quality. Whenever you are in the market send us your orders; we will fill them right.

Yours truly,

(Signed)

On the 21st day of April this Des Moines company received the above letter, and on the 25th of the same month the cheese was received. Two samples in a basket, one five pounds, and marked 24, the other a "Young America" of ten pounds, marked 24-4, was delivered to me, and after being stamped by me with dairy commissioner's stamp, and giving the five pound cheese number 24, and the ten pound number 25, they were forwarded by American Express Co. to Prof. J. B. Weems, Ames, Iowa, for analysis. His report is here given:

AMES, Iowa, May 3, 1895.

Hon. W. K. Boardman, Dairy Commissioner, Des Moines, Iowa:

DEAR SIR—The analysis of Nos. 24 and 25, the samples of cheese received from you on the 27th of April, have been completed by Mr. Helleman, assistant chemist. As stated above, on the 27th of April, there was received a package addressed to J. B. Weems, Ames, Iowa, sent by the American Express, and from W. K. Boardman, state dairy commissioner, Des Moines, Iowa, also marked Nos. 24 and 25. This package contained two smaller packages and below are given the marks on each, with the analysis of the same. One of the two packages bore the following marks: "No. 24." "W. K. Boardman, state dairy commissioner, Des Moines, Iowa." "5 lbs." This cheese having a deep, yellow-reddish color and a mild taste

The analysis of this sample gave the following results:

Moisture in cheese.....	32.94 per cent.
Curd.....	21.43 per cent.
Fat.....	35.98 per cent.

The fat from this sample of cheese gave the following results:

Volatile acids for 5 grams.....	1.65 c. c. alkali.
Insoluble fatty acids.....	95.1 per cent.
Iodine absorption number.....	45.
Saponification equivalent.....	217. m g. K o H.
Melting pt. of fat.....	42.65 c.

From the above analysis it is readily seen that the butter fat of the milk from which this cheese was made, has been, to a large extent, removed by some means, and other fats or fat added to replace it. The results indicating the added fat to have the nature of "lard," or similar fat.

The other package had the following marks: "W. K. Boardman, State Dairy Commissioner, Des Moines, Iowa," "-----, Des Moines, Iowa." In large black letters, "P-2 4/4." Said package contained a whole

Young America cheese, and was marked on the cloth in red letters f-inch high and enclosed by red lines, as follows:

WISCONSIN

FULL CREAM.

This cheese was of a light yellow color, a shade lighter than "June Butter." This sample was considered No. 25. The sample No. 25 gave the following analysis:

Moisture.....	27.35 per cent.
Curd.....	23.64 per cent.
Fat.....	31.33 per cent.

The fat of this sample of cheese gave the following results:

Volatile acids for 5 grams of fat.....	1.49 c. c. alkali.
Insoluble fatty acids.....	95.7 per cent.
Saponification in m g K o H for 1 g.....	208.3
Iodine absorption number.....	40.6
Melting point for fat.....	37.4 c.

From this analysis it is also readily seen that almost all the original butter fat contained in the milk from which this cheese was made was removed by some means, and replaced by other fats or fat. The results indicating that the nature of this fat was "lard" or a similar fat or fats.

Below is given what is generally, I think, considered the limits for pure butter fat:

Volatile acids for 5 grams fat.....	25.	—35 c. c. alkali.
Insoluble fatty acids, about.....	97.50	per cent.
Saponification equivalent in m g K o H, about.....	237.	
Iodine absorption number.....	37.	—50
Melting point for fat.....	33°	—34° c.

Lard may be said to give something like the following results:

Volatile acids, about.....	4 c. c. alkali.
Insoluble acids (fatty).....	93 to 95 per cent.
Saponification equivalent in m g K o H.....	135.
Iodine absorption number.....	50. to 61.9
Melting point of fat, about.....	40° c.

I think that from the above it can be readily seen by almost any one that these samples of cheese contained a fat which contains a very large per cent of fats of an animal nature. In making cheese from milk which has had the butter fat removed from it to a large extent, there remains a small amount of butter fat, as is well known. Cheese made from skim milk has in it a small per cent of butter fat. This also occurs in the case where other fats are added to skim milk. This accounts for the slight tendency, which is very small, of the analysis to indicate a small part of butter fat. Yours very respectfully,

J. B. WEEMS.

The firm withheld the goods from sale and waited until a report of the analysis could be obtained, after which the goods

were re-shipped to Chicago, as will be seen from the following letter:

DES MOINES, Iowa, May 4, 1895.

GENTLEMEN—We hand you herewith invoice and bill of lading for cheese shipped us, and which we return.

These goods have been analyzed by a competent chemist, and under our state law we cannot handle them. They are in fact "filled cheese." We have been notified by the state dairy commissioner of Iowa not to sell them. Respectfully,

(Signed) _____

They received the following letter, which, with the one written by the same firm to the other Des Moines dealer, would indicate that the writers depended upon their "brass and bull-dozing methods" to convince customers of their honesty.

CHICAGO, ILL., May 9, 1895.

DEAR SIR—Yours of the 4th is at hand and noted. It is hardly worth while replying to your letter, you seem to be positive and everything fixed, but we would be willing to wager almost anything that the competent chemist of yours does not know any more about the adulteration of cheese than our dog does. This may be harsh to say, and when he says that those cheese that we shipped you and that are in question, if they are the goods that we sent you, are filled goods, he don't know his business. You people in Iowa must have a great deal to do, to allow yourselves to be led around by the nose by such a know-nothing. It has got to be a sad state of affairs when a man has got to resort to that kind of business. The cheese that we shipped you never were filled, and if you never get poorer goods than those you will be very fortunate. Yours truly,

(Signed) _____

In order that there could be no chance for a mistake as to the result of this investigation, additional samples from the same Chicago firm were obtained through parties in other parts of the state. These cheese were marked and shipped by express to Professor Weems. The result of the analysis, like all previous ones, was of such a nature as to leave no chance for a doubt as to the rank and contemptible fraud that was being perpetrated upon our people. The following is a report of two of the samples:

AMES, Iowa, May 13, 1895.

Ho. W. K. Boardman, State Dairy Commissioner, Des Moines, Iowa:

DEAR SIR—The analysis of samples of cheese Nos. 28 and 32 have been completed by Mr. Helleman, with the following results:

No. 28. Received on May 7, 1895, a box, by American Express Co., from W. K. Boardman. Tag on box was marked No. 28. The box contained letters 1½ inch in black making the following words: "Fancy Full Cream Durham Cheese," also a representation of a cow, and by it the words, "Trade Mark." The box lid had also the following marks, "(56)" and "($\frac{7}{8}$)," and the following words were in note on the cheese inside of box:

"No. 28. From " Box marked, "Fancy Full Cream Durham Cheese. (56) ($\frac{7}{8}$)." This cheese was cut so as to take a fair sample, and an analysis gave the following results:

Color, light yellow.	
Moisture	42.06 per cent.
Fat	27.49 per cent.
Caseln (curd)	22.28 per cent.

The fat gave the following analysis:

Volatile acids, 3 grams fat.....	1.2 c. c. n. o. h. n.
Insoluble fatty acids	34.9 per cent.
Iodine absorption number	50.21
Saponification equivalent in m. m. g. of K O H	202.8
Melting point of fat	49.8 c.

The results of this analysis indicate that the cheese was made from milk having its contents of butter fat removed by some means, and replaced by other fat or fats, the analysis indicating that the fat is almost entirely lard or similar fat.

No. 32.—Received on May 2, 1895, by express, one cheese box containing 4 Y. A. cheese. The box contained the mark (34) on it. Inside of the box was a letter of the date of April 29, 1895, from.....x, of which the following is a copy:

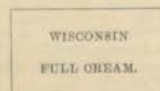
Prof. J. B. Weems, Ames, Iowa:

We send this sample exactly as received, as per instructions, from W. K. Boardman,

Call the sample (32). Yours,

(Signed) _____

Each cheese had the following mark upon it in red letters surrounded by led lines:



One of the four cheese was selected for the analysis and gave the following results:

Color, light yellow.	
Microscopic test gave an "Oleo" field.	
Moisture	35.019 per cent.
Fat	31.25 per cent.
Caseln (curd)	24.54 per cent.

The fat gave the following results:

Volatile acids from 5 grams of fat	2.5 c. c. n. a. o. h. n. 10
Insoluble fatty acids	95.2 per cent.
Iodine absorption, number	48.06
Saponification, equivalent in m. m. g. of K O H	202.5
Melting pt.	46.5° c.

Results indicate that this cheese was made from milk which had its contents of butter-fat removed by some means and replaced by fat or fats having the nature of lard or similar fats.

If the above results are compared with the statements made in my letter of May 3, 1895, it is readily seen. I think that the butter-fats of the original milk are replaced by a fat similar to lard. Both samples, Nos. 26 and 32, being what are called "filled cheese."

Yours very respectfully,
(Signed)

J. B. WEERMS.

While I was investigating this filled cheese business and its relation to Iowa dealers, it was necessary to settle in my own mind a number of questions in order that I might act in the discharge of my official duties in such a way as to enforce the laws of the state, put a stop to this fraudulent traffic, and at the same time guard the good name and business standing of our wholesale merchants, if they were innocent of any intentional wrong. A large amount of time was spent in an effort to educate myself so as to tell by color, taste, smell, moisture, texture, and by the use of different acids, an adulterated cheese.

I advised with cheese men, cheese-makers, chemists, dealers, and others within my reach, whose experience and study in this line should make them good authority. I corresponded with the dairy and food departments of other states, asking for knowledge and practical experience. The following letters are to the point:

EDWARD J. WHEELER, PH. D.,
ANALYTICAL AND CONSULTING CHEMIST.

ALBANY, N. Y., March 22, 1895.

W. K. Boardman, State Dairy Commissioner:

DEAR SIR—Your letter of March 18th to Fred Scraub has been referred to me. In reply, would say, I know of no other reliable method for distinguishing between a filled cheese and a genuine full-cream or skim cheese, other than a careful examination of the fat.

Yours respectfully, (Signed) EDWARD J. WHEELER.

STATE OF MINNESOTA,
DAIRY AND FOOD DEPARTMENT,
ST. PAUL, March 30, 1895.

Hon. W. K. Boardman, Des Moines, Iowa:

DEAR SIR—In reply to yours of the 15th inst., I will say: we know of no way other than a chemical analysis for detecting filled cheese. We are governed by the price paid for the article.

If a merchant pays 8 cents for cheese when the genuine article is worth ten (10) cents on the market, we are forced to believe something is wrong. In such cases we take a sample and forbid the merchant selling it until the chemist makes a report on the same. But it is impossible to detect it on a preliminary examination. Very truly yours,

(Signed) BERNARD ANDERSON.

The same conclusion was reached by myself as is expressed in Commissioner Anderson's letter: "It is impossible to detect

it upon a preliminary examination." Chemical analysis is absolutely necessary in many cases. There are cases in which the adulterations are so marked that an expert cheese dealer, or one accustomed to handling both genuine and "filled" goods, would have no difficulty in knowing what he was buying and selling. The manufacture of these adulterated products has been in many cases reduced to a science. The work is done in a very skillful manner, defying detection except by the use of chemicals in the hands of a carefully educated and experienced chemist. In view of these facts I decided not to prosecute and expose Iowa dealers, whom I believed were being imposed upon, and their business injured through the false representations of this Chicago firm.

Whether these representations by this firm were made with full knowledge that they were false and fraudulent, relying upon the careful and scientific manner in which their filled cheese were made to defy detection, or whether they were in truth deceived by the manufacturer, may be an open question. They were outside of my jurisdiction, and Illinois not having a law on this subject, it was useless to investigate the matter.

This firm* I have known for many years, and they have always borne a good name, stood well in business circles. These people sold and offered for sale this class of cheese all over Iowa, and guaranteed them to be "full cream, free from adulteration, and up to any of your state laws."

That any reputable dealer could knowingly sell filled cheese upon such a strong unequivocal guarantee as they gave is hard to believe, but, be this as it may, the return of the cheese by the Des Moines dealers to the Chicago firm, the hearty co-operation of the Western Wholesale Grocers' Association with this department, in its efforts to stop this fraudulent traffic, awoke this firm to a full realization of the situation, and caused them to announce to the trade the employment of a competent chemist to thoroughly examine the products of the factories handled by them. We have not had the time to fully investigate and satisfy ourselves that this reform was ever actually inaugurated by this Chicago firm.

The inducements to make, buy and sell filled cheese is greater in the fall, winter and spring months, when the prices of dairy

*The reason the name of this firm is not used is that we are unable to prove that they were aware that the goods sent out as "full cream cheese" were adulterated. We prefer to await further developments.

products are higher and the weather more favorable for handling them. This department has been very busy collecting material for this report during the fall months, and has not had the time to devote to this subject. This line of work draws heavily upon the limited appropriation made for this department; nevertheless, it is our intention to take it up in the near future and find out, if possible, the extent of the traffic in our state, and whether the pretensions of our Chicago dealers, as referred to in their announcement to the trade, are being carried out. We can assure them, also, the jobbers, retailers and consumers, that if we find them still engaged in this nefarious work, their exposure will be prompt and state-wide.

DIFFICULTIES IN THE DETECTING OF FILLED CHEESE.

The enforcement of our Iowa law, on the subject of filled cheese, is surrounded with great difficulty. I have reviewed this case in detail to show some of the troubles we meet. It is within the range of possibilities to enforce the law and protect our jobbers from being imposed upon, provided sufficient appropriation is made to this department, so that a reasonable amount can be expended for frequent investigations and analysis.

Our Iowa jobbers, as a class, are honorable, upright business men and representatives of our best citizenship. They have given this department valuable support, as an association and by individual action and co-operation. Many suspicious quotations, and other information of value have been furnished the department by them.

The Iowa law does not, and should not, make any distinction between the dealer that knowingly and the one that innocently sells filled cheese. The law presumes that the dealer knows what he is selling, and holds him responsible. But from what has gone before it is plain to be seen that the only absolute guarantee that the dealer may rely upon is a chemical analysis. The enforcement of a requirement of this kind would compel every retail dealer in the state to quit the business of handling cheese.

As has been before stated, there were large quantities of filled cheese sold last winter and spring to the retail trade of the state. They were ordered on the representations contained in circulars sent out by responsible Chicago dealers, guaranteeing their products to be full-cream cheese. Some portions of the state were absolutely flooded with these circulars. The

firms sending them had good business standing, and hence their sales were correspondingly large.

It is impossible, with the funds at our command, and probably impossible under any conditions, for the commissioner or his agents to visit all the retail dealers in the state and have each invoice of cheese inspected and analyzed. We now have to rely principally upon the education of the retail dealer to be suspicious and to examine the quality of each shipment received, and if his cheese are not satisfactory to the customers, to report the same to this department and forward a sample for analysis. Many samples have been received, and some collected by the commissioner, and all the analyses have been made for which funds could be safely used.

Most of the analyses were made under the direct supervision of Professor J. B. Weems of the State Agricultural college, professor of agricultural chemistry and chemist of the experiment station—a man of strict integrity, and ranks in professional ability with the first class chemists of this country. He was selected for these difficult positions after a most thorough and careful investigation, by the president and board of trustees of this great scientific institution. Professor Weems has cheerfully and promptly, at reasonable cost, made all the analyses that this department has requested; nevertheless, neither he nor the institution he represents is under any legal obligations to perform them, and the time may come when it will be impossible for them to accommodate this department.

The state should either create the position of state chemist or authorize the state dairy commissioner to connect with his department a chemist with fixed duties and responsibilities. This addition to the department with sufficient appropriation to meet the expense of judicious enforcement of our Iowa laws, will obtain satisfactory results. We have no important changes to recommend in the law governing imitation cheese, but if additional help is given to the department in the direction of more thorough milk and creamery inspection, it may be used with scarcely any extra cost, in the more efficient enforcement of this law.

NATIONAL LAW NEEDED.

The great need of Iowa and all states having legislative enactments against filled cheese, is a national law placing this fraud in the same category with oleomargarine. The National Dairy union has this matter in charge, and should have the

hearty and active support of every dairy, creamery and produce association of this country. The national oleomargarine law locates the manufacturer by charging him a license and putting his business under strict regulations of the treasury department at Washington, which has prohibited the use of all brands, trade-marks, pictures or other markings suggesting the idea of butter, or its source. Every package must be branded "Oleomargarine," and wear the government revenue stamp. This is notice to every wholesale and retail dealer of the nature of the article he is handling, and enables the government and state officials to detect it in the hands of dealers buying and selling it unlawfully. The law also locates the wholesaler and retailer by requiring them to procure government licenses. The penalties for failing to comply with these regulations are so severe, and the decisions of our federal courts so prompt and effectual, that no dealer of any responsibility and having common sense will try to deal in oleomargarine without complying with their provisions.

When a manufacturer or dealer complies with this law, he has placed himself where state officials can find him and see that he is complying strictly with the laws which they are appointed to enforce. If congress will give us the same aid in locating dealers in filled cheese, this department stands ready to guarantee that filled cheese having a yellow color, or any shade of yellow, so as to resemble genuine cheese will be a thing of the past, in this state. Such a law coupled with our Iowa anti-color law will protect the consumer. Yellow colored cheese will be a guarantee to the buyer and consumer, that he is not being deceived into using filled cheese.

This is what the people need, and we hope that our present congress will give them this relief.

WORK DONE BY WISCONSIN AND NEW YORK.

The filled cheese question has received a great deal of attention during the past year from cheese producing states, and some of our larger cities. The state of Wisconsin foolishly permitted the manufacture of this fraudulent product, and many of her factories had been producing large quantities of filled cheese. The good name and high reputation of Wisconsin cheese was severely affected and this great industry practically ruined. Last spring the dairy people of that state aroused themselves. The State Dairy association declared against

fraudulent food products, and enlisted in a war, both state and national. The Wisconsin legislature enacted a law similar to that of Massachusetts and Iowa. The governor appointed a new commissioner, who has been actively at work ridding the state of all counterfeits and frauds in the dairy line. Wisconsin has been the greatest cheese producing state in the west. At one time before filled cheese was heard of the reputation of her cheese was only second to that of New York. Her good name to some extent still remains, and many unscrupulous manufacturers and dealers in Illinois, are branding their fraudulent products "Wisconsin Full Cream Cheese." Some of these goods were shipped into Iowa last spring, coming under my own observation and proved to be "filled."

New York is the great cheese producing state of this country and is well provided with a prohibitory law, but nevertheless has suffered immeasurably from the general depression that has overtaken this great industry, from the immense amount of filled cheese that has been produced in the west. The consumption of genuine cheese in this country has decreased enormously in the past few years. The cheese-makers have killed the demand. They began by skimming the milk, taking out a portion of the fat. Their greed for gain soon had the better of them, and by the use of the separator all of the butter fat was taken from the milk and replaced as far as possible by lard and other fats. This kind of work has brought destruction, and almost ruin, upon our home and foreign trade. Information from dealers is to the effect that where families at one time purchased a whole cheese, they now buy only a pound or two at long intervals. The southern trade has been terribly deceived, as large quantities of adulterated cheese have been sold and shipped into that territory. New York dealers fully realize this, and are now at work educating these people, trying to protect their interests in that section of the country. The cheese men of New York did not take such active interest in the oleomargarine fight, but are now fully stirred up and are taking a hand in this movement for pure cheese. The board of trade of Utica, N. Y., has organized for this fight, and has issued a strong appeal to all who are interested in pure dairy products.

Their greatest endeavor will be to save the southern and foreign markets by sending experts into the south and employing a competent and honest person to watch the exports from New York.

OUR EXPORT TRADE.

Our export trade has been all but ruined. Large quantities of filled cheese have been sent to England in the last few years and sold, without warning, to the dealer or consumer. Many dealers have lost from the deterioration in the goods and decrease of trade, from the dissatisfaction of their customers, therefore, they do not seek our cheese, but buy elsewhere. The following petition from the London Provision Trade, to the governor and legislative assembly of Illinois, fully explains their position:

PROTEST AGAINST FILLED CHEESE.

HOME AND FOREIGN PRODUCE EXCHANGE, LIMITED,
HIBERNIAN CHAMBERS, LONDON BRIDGE, S. E. ENGLAND. }
To the Governor, Senate and Assembly of the State of Illinois, U. S. A.:

A question of vital importance to the interest of the cheese-making industry of your state has for some time past been receiving the serious attention of the London Provision Trade, viz., the importation from your state of imitation or filled cheese, made of a mixture of foreign fat and poor skim-milk curd. This article has none of the properties of cheese, as the added fat merely disguises the poverty of the curd, and rapidly becomes rancid and offensive. By reason of the difficulty of detection from outward appearances, unscrupulous dealers here are pushing it into consumption as genuine, with the result that a very grave taint is being attached to all cheese coming from Illinois, and consumers generally will be prejudiced against cheese as an article of food. This matter is of so serious import to your farmers, as it is most desirable that the good name of Illinois cheese should remain unsullied. The trade here, therefore, most respectfully urge your senate to legislate this matter without delay, and in such a way as will stop the manufacture of the spurious article altogether. Such action will at once remove all suspicion attached to the importations from your state and place the trade upon a credible and honorable basis.

JOHN D. COPEMAN,
Chairman.
JOSEPH R. WEND,
Chairman Sub-Committee.
C. J. HIGGINSON,
Secretary.

This petition presents a state of facts that are most deplorable, and certainly justifies all that our commissioner of agriculture in his late report says in regard to our cheese trade and market. This part of his report is so interesting and instructive, showing the necessity of national help in this direction so plainly, that we give it here in full:

Throughout the year United States cheese has commanded the minimum figure upon the English market, and as by the operation of an invariable law the lower grades always suffer the most by a material fall in

prices, our cheese has suffered disproportionately to other makes by the depressed condition of the English cheese market, and has reached in 1895 the lowest price yet quoted for American cheese in that country, namely, \$2.17 per 100 pounds.

Our agent and correspondent reports in explanation that "United States cheese is, as a whole, the poorest in quality that reaches the English market, and the British public are not only aware of the fact, but are prejudiced against it because so much in the past has been adulterated." While accusations that "filled cheese" is being dumped on the British markets from the United States go unrefuted, the very first statement impugning the Canadian product in the same manner was met with cabined denials from the Canadian government; denials from the Canadian agent-general in London and Canadian exporters. The incident it seems has actually turned out to be an excellent advertisement for Canadian cheese, and it is now perfectly well understood by the British public that Canada is maintaining with strenuous care the quality of her exports.

During the first eight months of last year Canada and the United States stood side by side in supplying the English market with cheese; but whereas Canada has this year not only held her own but made a slight gain, shipments from the United States have fallen off 117,000 cwt., an amount about corresponding to the increased shipments of Australasia and Canada and to the falling off in the total imports into Great Britain. In fact, every country shipping cheese to Great Britain has this year enlarged its trade with that country except the United States, which has lost over 21 per cent of its last year's business.

TABLE SHOWING THE QUANTITY AND VALUE OF CHEESE IMPORTED INTO THE UNITED KINGDOM DURING THE FIRST EIGHT MONTHS OF THE YEARS 1893, 1894, AND 1895.

FROM—	QUANTITY (CWT. OF 112 LBS.)			VALUE		
	1893.	1894.	1895.	1893.	1894.	1895.
Holland.....	174,009	169,904	200,561	\$ 2,139,135.00	\$ 2,302,591.91	\$ 2,479,425.25
France.....	38,335	35,812	37,502	579,877.53	604,003.05	605,781.79
Australasia.....	30,190	50,276	105,109	450,513.35	623,520.09	1,093,155.94
Canada.....	405,642	331,538	333,612	5,814,139.42	6,037,725.15	6,289,047.03
United States.....	822,471	597,741	497,949	8,277,775.25	6,570,412.91	4,570,221.94
Other countries.....	15,000	5,209	14,574	255,978.18	403,104.30	171,252.14
Total.....	1,594,588	1,372,670	1,399,303	\$15,442,539.35	\$16,160,650.36	\$14,130,461.97

No one can carefully peruse the above facts and figures without arriving at the conclusion that unless our shippers of cheese pursue a very different course, the history of our foreign trade in that product will speedily fall in the face of active, intelligent and honest competition from all parts of the world, to the level now occupied by American butter. We have here a graphic illustration of the disastrous effects in all trade of disregarding the tastes of consumers and of acquiring a bad reputation.

CONGRESS SHOULD GIVE RELIEF.

It seems as if the condition of affairs in regard to this subject demanded the most careful consideration of congress, and it is plain to be seen that a law similar to the oleomargarine

enactment, governing the manufacture and sale of filled cheese, would be of valuable help in restoring confidence at home and establishing a desirable reputation abroad. A law bringing this article under the control, and regulation, of the treasury department having been enacted the ruling that has just been made in regard to oleomargarine, by Commissioner Miller, would apply to the branding, and manner of handling this mixture at home and for exporting. In the proposed law some name should be given this combination of casein and animal fat, and it should be required to be put up in a shape that would not suggest the idea of cheese, or any other dairy product.

Iowa is not at present and may never be, a cheese-producing state. Her proud position as first in the production of butter, is very satisfactory to her dairy people. It is not the quantity of the product alone, but also the price at which they sell, that determines the value of the resources of the state. The pure butter and cheese products of this country come from our cows, and the more whole milk that is utilized in the manufacture of cheese the less remains to be made into butter. It is for the interest of the Iowa butter producer to have the milk produced in Wisconsin, Illinois and New York made into genuine cheese, rather than into butter. It is also to her interest as a manufacturer of butter that these states, and all other cheese-making states, produce the best possible article of cheese, and find a ready market at a fair price for all they make. It is certainly against her interest for them to make large quantities of filled cheese, replacing the butter fat of the milk with hog fat, and converting the butter fat into butter, to be placed on the same market in competition with Iowa butter. Again, it is to the advantage of Iowa's favorite dairy product that the demand for full cream cheese be maintained and increased from year to year, for the reason that the manufacturer will not long continue in an unprofitable business, when, with but little additional outlay in many cases, and without any in others, he can turn his milk into butter at a better profit. Is it not a fact that Iowa is as much, and in most cases more, interested in national legislation for the control and regulation of the making, selling and exporting of adulterated cheese than other states? The work of getting this needed legislation should not be underestimated. The large and wealthy manufacturers of oleomargarine are interested in the production of filled cheese, because they furnish

the animal fat that enters into the composition. The dairy people of Illinois and the produce dealers of Chicago discovered the strength of the oleomargarine manufacturers and the filled cheese-makers when they combined and defeated the anti-color bill in the senate of that state last spring.

While in no way relaxing our efforts to drive oleomargarine out of existence, let us proceed with all our combined strength to exterminate its "twin fraud" and the abomination called "filled cheese."

THE CONDITION OF THE BUTTER AND CHEESE INDUSTRY.

The shipments of butter to points outside of the state, as reported by the railways for the corresponding periods each year, from October 1st to the 1st of the next October, from 1890 to 1895, inclusive, after deducting 16 per cent of the gross weight for tare, are as follows:

1890	71,255,796
1891	68,690,716
1892	60,112,931
1893	54,572,902
1894	54,509,417
1895	60,479,108

In compiling the shipments by counties this year an error was found affecting the shipments from Howard and Winneshiek counties for the year 1894. These shipments, from the stations located along the line of the Chicago, Milwaukee & St. Paul railway from Calmar north, were not included in the statement made by this road to this department last year. As the total shipments from the state for the years 1893 and 1894 were practically the same, the amount shipped in 1893 from each station omitted has been credited to the counties for the year 1894, increasing the shipments from Howard county 1,243,264 pounds, and Winneshiek, 971,180 pounds. This makes an increase of 2,214,464 pounds in the gross shipments of 1894, or 64,892,163 gross pounds, deducting 16 per cent for tare, makes 54,509,417 pounds, the net amount now credited to the year 1894. The past year has been a very favorable one for the production of butter, and the shipments show a gain of 11,969,691

net pounds over the year 1894. This gain of about 22 per cent has been accomplished, notwithstanding an apparent decrease of thirty-two in the number of creameries in operation during the year. The industry has not regained the position it occupied in 1890 and 1891, as shown by the railway shipments for those years, but I think we are safe in saying that the home consumption of the 146,178 net increase in population, that has been added during the five years, has been more than enough to make up the difference and bear out the statement that the year 1895 was the largest in the production of butter in the history of the state.

THE BUTTER MARKET COMPILED FROM NEW YORK MARKET REPORTS.

MONTH.	Twelve months ending Nov. 1, 1891.		Twelve months ending Nov. 1, 1892.		Twelve months ending Nov. 1, 1893.		Twelve months ending Nov. 1, 1894.		Twelve months ending Nov. 1, 1895.		Average per month for 5 years.
	1891.	1892.	1892.	1893.	1893.	1894.	1894.	1895.	1895.		
November.....	27.46	29.06	31.00	27.90	22.19	28.18	28.18	28.18	28.18	28.18	28.18
December.....	29.12	28.71	31.13	29.40	24.60	28.38	28.38	28.38	28.38	28.38	28.38
JANUARY.....	29.12	29.73	32.53	29.23	25.19	28.71	28.71	28.71	28.71	28.71	28.71
February.....	29.62	29.73	29.23	27.00	22.94	27.61	27.61	27.61	27.61	27.61	27.61
March.....	27.80	29.65	29.23	27.50	26.79	26.48	26.48	26.48	26.48	26.48	26.48
April.....	29.94	29.69	31.13	28.27	20.00	25.92	25.92	25.92	25.92	25.92	25.92
MAY.....	2.80	2.28	2.83	1.70	1.76	2.09	2.09	2.09	2.09	2.09	2.09
JUNE.....	1.85	1.94	2.31	1.81	1.74	1.95	1.95	1.95	1.95	1.95	1.95
JULY.....	1.80	2.10	2.60	1.80	1.70	1.98	1.98	1.98	1.98	1.98	1.98
August.....	2.00	2.20	2.20	2.00	1.80	2.00	2.00	2.00	2.00	2.00	2.00
September.....	2.63	2.60	2.50	2.60	2.13	2.75	2.75	2.75	2.75	2.75	2.75
October.....	3.00	3.67	2.41	3.40	2.94	3.26	3.26	3.26	3.26	3.26	3.26
Average value per pound for each year.....	29.53	29.94	27.78	28.50	21.90	.....	.....	.....	.....	.....	.....
Average value of butter per pound for the period of five years.....											24.68

The above table gives the average monthly price of butter for each month during the last five years, in the New York market, and the average price for each month for five years; also the average yearly price for each of the five years, and the average price covering the entire period. The months of January have the highest average, being .2871 cents, the months of June the lowest, being .1905 cents, a difference of .0966 cents in favor of these winter months.

The yearly average price for 1895 is .016 cents lower than for 1894, and .0278 cents lower than the average for the five years. Seventeen cents, the lowest monthly price was for the month of May, 1894, and lowest price for 1895 was .177 cents for July.

The large production of butter throughout the dairy states has had its effect upon the markets, to lower the price, and the prevailing hard times, has made it necessary for a large number

of dining tables to be served without the presence of butter. While the markets have been very low, there can be no question but they would have gone lower had it not been for the many anti-color laws. Most of the recently passed laws upon this subject had not become well established in their operations, and many of the states where the old laws were lying dormant, pending a decision of the supreme court upon their validity, had not had time to reach all the offenders.

WHAT THE BUTTER MARKET DEPENDS UPON.

The butter market of the future, outside of one great question of production, will depend for its prices principally upon two things, first, the enactment and enforcement of police regulations in regard to the manufacture and sale of oleomargarine and filled cheese; second, the education of all parties connected with the production of butter and cheese. The farmer must be instructed how to produce pure and wholesome, rich milk, the creamery proprietor and butter-maker, to manufacture pure, clean, high-flavored butter; the cheese-maker, to put on the market well made, full cream cheese, of varieties suited to the demands of the consumers. The first mentioned requirements have made rapid progress in the last year or two, and in our own state we have been successful far beyond the most sanguine expectations. The movement has progressed so well in the other states that when Illinois, Kansas and Indiana have been brought into line, we may consider that the greater part of the work in procuring state control of the manufacture, sale, and use of fraudulent dairy products has been accomplished. Still there is much to be accomplished through national legislation. Filled cheese should be taxed, and the manufacture of it regulated by the treasury department. Our export trade should be protected, either by such additional regulations or by such new laws as will make it impossible to deceive the foreign dealer, and if possible the foreign consumer should be protected. The greatest frauds in this line have been perpetrated in the past, upon the people of the different countries of South America, the West Indies and Spanish Islands. This line of work must be followed up by some organization in the interest of the dairy industry. The New York Merchandise exchange and the National Dairy union have done much in this direction, and should be supported and encouraged.

EDUCATIONAL WORK.

The other, and the most potent influence in determining the future profitableness of the dairy industry, is the question of education.

The cost of production is all important, and must be studied, not only by operators of factories, but by those on the farms where the milk is produced. The lines of education are being rapidly extended; most of the agricultural colleges in the dairy states have established dairy departments, opened winter schools for the education of butter and cheese-makers, the experiment stations are investigating and promulgating many new features, bringing the results of their scientific researches within the reach of the ordinary operator. These stations publish their experiments and investigations in the form of bulletins, issuing thousands of them to be distributed among the farmers of the states. The United States department of agriculture has taken an advanced step in the matter of dairy education, and established a dairy division as will be seen from the following circular:

UNITED STATES DEPARTMENT OF AGRICULTURE.

BUREAU OF ANIMAL INDUSTRY.

WASHINGTON, D. C., July 1, 1895.

In accordance with an order made by the secretary of agriculture and dated April 18, 1895, a new branch of this bureau has been organized this day, to be known as the dairy division, and Henry E. Alvord, of Virginia, has been appointed as its chief.

The object and purpose of this division will be to collect and disseminate information relating to the dairy industry of the United States in such manner and to such extent as may be deemed most expedient and beneficial.

The progress of the work will be made known by bulletins and reports published and distributed from time to time. The division desires to make up a mailing and exchange list, and invites active co-operation on the part of dairy organizations and individuals in any way connected with this important industry.

Correspondence should be addressed to the secretary of agriculture, but all printed matter may be mailed direct to the Bureau of Animal Industry, Dairy Division, U. S. Department of Agriculture, Washington, D. C.

D. E. SALMON,

Chief of the Bureau of Animal Industry.

The dairy industry is to be congratulated in this new departure. Since Hon. Henry E. Alvord assumed charge of this position, J. H. Monrad, of Winnetka, Ill., has been appointed

special agent Dairy Division United States Department of Agriculture, and has commenced the collection of facts and statistics in connection with the dairy industries of the western states. We shall expect good results from this division of the agricultural department at Washington.

THE IOWA STATE DAIRY ASSOCIATION.

This organization has held nineteen annual meetings and been of much benefit to the dairy interest of our state. These meetings are held at some central place and are attended by the best talent that the industry can produce. It has been the practice to hold these meetings at different places, and the community that has been favored has shown marked advancement along the dairy line. A regular program is prepared, addresses are made by the leading agriculturalists of the state, and the practical side of all branches of the business is presented by the farmer, factory man, and the butter and cheese-maker. The professors of our college and experiment station, editors and contributors of the dairy press, representatives of our best commission firms and supply houses meet with the farmer, dairy man and operator, and all discuss questions of large moment to the business and of great value to the state. The character of the proceedings of this association are of a high order and should be classified along with those of other kindred agricultural organizations. The proceedings should be published at the expense of the state and distributed among the people who need to be informed and instructed regarding the questions presented and discussed at these annual meetings. Many cannot attend, but would be greatly benefited by reading the reports. A small annual appropriation for the publication of the proceedings of this worthy organization should be made by the legislature.

THE DAIRY SCHOOL.

At the Iowa Agricultural college is established a dairy school which is doing grand work along this educational line. Young men are here taught by experienced educators, on all lines connected with the dairy. A complete creamery is now in operation at all seasons of the year. The manufacture of both butter and cheese is continually carried on, and students receive thoroughly practical as well as scientific instruction.

According to the reports received from the creamery and cheese factories of the state there are now sixty-two butter and cheese-makers who have had a course in dairying at some dairy school, either in this country or in Europe. Of this number forty are reported as having received this instruction at the Iowa dairy school at Ames. This by no means represents the number who have taken this course at that school, for many of the graduates have been called to other states to fill important positions either as instructors in similar institutions, or as employes of butter or cheese factories.

FARMERS' INSTITUTES AND DAIRY PRESS.

Farmers' institutes are held each winter in the most progressive counties of the state; the meetings last two or three days and one day is generally given to the discussion of dairy subjects, in the dairy sections of our state. This feature should extend to all counties holding these institutes. The dairy press is doing a large amount of valuable work in keeping the progressive dairy and creamery man abreast of the times. Some of our papers even offer prizes at our fairs and conventions for the best butter and cheese displayed, in this way encouraging greater efforts to excellency in the production of the highest grade of butter and cheese. Our state dairy association and our state fair prizes all assist in this good work.

LIST OF FIRST PRIZES AWARDED TO IOWA BUTTER-MAKERS.

The following prizes were awarded during the year and are worthy of mention: Iowa Dairy association, November 15, 1894, at Ames, Iowa, first premium was awarded to J. Q. Moore, Iowa Center, Story county, Martin Mortenson, butter-maker, separator butter, score 89½ points, 61 entries; first premium on gathered cream butter to E. J. Swift, Secretary, State Center, Marshall county, score 97, ten entries.

February, 1895, National Butter-Makers association, Rockford, Ill. First premium, separator butter, F. C. Olterogge, butter maker and proprietor, Tripoli, Bremer county, score, 98 points, 98 entries. Gathered cream, E. S. Allen, Clarion, Wright county, score, 98; entries, 25. Entries for separator butter were made from eight states. The Chicago produce gold medal for the best butter shipped to the Chicago market for June, not less than five tubs, was awarded to C. R. Fuller, Jesup, Buchanan county, Iowa. Score, 990, out of a possible 1,000, 48 entries from seven states, 26 of them from Iowa. The inspector's report is given in full:

INSPECTOR'S REPORT.

Flavor was fine and all other features of this lot of butter were excellent. There was scarcely any perceptible fault to find except the slightest trace of milky brine.

Scores—

Flavor.....	440 out of	450
Grain.....	300 " "	300
Color.....	100 " "	100
Salt.....	100 " "	100
Package and packing.....	50 " "	50
Totals.....	990 " "	1,000

The Chicago produce medal, for July, was awarded as follows: Iowa medal, A. Erickson, Clermont, Fayette county, Iowa, score, 975; entries, 14.

The Chicago produce medals for August, awarded as follows: Sweepstakes, A. Erickson, Clermont, Fayette county, Iowa, score, 980; 69 entries from eight states. Iowa medal, B. Jones, Volga, Clayton county, Iowa, score, 970; 29 entries. The Chicago produce medals for September were won, sweepstakes by B. Jones, Volgs, Clayton county, Iowa, score, 975. Iowa medal, W. G. Clark, Germanville, Jefferson county, Iowa, score, 970. October prizes from the same publication went to the following: Sweepstakes, W. G. Clark, Germanville, Jefferson county, Iowa, score, 970. Iowa medal, W. F. Stewart, Fontanelle, Adair county, Iowa, score, 965. In all of these contests each exhibitor received the report of the inspection on the scoring of his butter, also suggestions from the inspector as to changes in its manufacture, necessary to improve its quality.

Another of the important educational factors in the dairy industry, is the dairy department of the Iowa state fair. Premiums are offered for separator, gathered cream and dairy butter, and a sweepstakes for the best butter made by any regular method. This year F. D. Pierce of Cedar Falls, scored the highest on separator, 97 points. W. R. Layton of Williamstown, Chickasaw county, and C. H. Lyon, Dallas county, scored the highest for gathered cream, 94 points; and W. C. Bullou, Littleton, Buchanan county; C. L. Gabrielson, New Hampton, Chickasaw county; D. L. Larkin, Rockwell, and P. G. Henderson, Central City, Linn county, all scored 95 on dairy butter. Sweepstakes were given to H. D. Parsons, Newton, Jasper county, and F. D. Pierce, Cedar Falls, Black Hawk county, score, 97.

SUPT. E. C. BENNETT'S REMARKS.

The superintendent, E. C. Bennett, of the department, furnishes the following article:

A HIGHER STANDARD FOR IOWA BUTTER.

"The Iowa Dairy association and the dairy department of the Iowa state fair have worked in harmony for the advancement of the dairy industry of the state. The rules governing the exhibits are substantially the same and the standard has been set higher to correspond with the improvement in the grade in butter. For the first time, a minimum of ninety points was required at the last state fair and it was justified by the results, and the same minimum was required at the last dairy convention. Minnesota demands almost as high a standard, having fixed upon eighty-nine points as a minimum, and is making

great efforts to get ahead of Iowa and put the minimum at ninety-two. New York already has the minimum at ninety-four. It is evident that a high standard is desirable or there would not be so great efforts made to have it. A good name for our dairy products is worth having, and to get it and hold it we must make the butter worthy of it. There is no lasting benefit to be gained by fictitious scoring, that is by raising the score for the sake of appearances. It must be honestly earned in order to entitle it to confidence, for sooner or later our sins will find us out. Confidence is a plant of slow growth, and once killed, the shoot from the old root is tardy in starting and slower of growth than the original plant. It is better in the long run to have our butter scored with justice untempered by mercy, and then we are sure of our ground and can defend it against the world.

"In one classification of butter at the last state fair not a single entry scored below ninety points, and the scoring was strict. In the other classes nearly all came up to, or went above that standard. It was found that the raising of the standard five points was one that Iowa butter can stand. But ninety is not perfection. The aim should be to approximate still closer to 100. Since it is universally admitted that Iowa butter can now be scored strictly with the minimum at ninety, the attention of butter-makers is fixed upon a higher standard and not one of them is content with ninety as their score. They aim higher, and most of those exhibiting at the fair succeeded. How can the butter be improved?

"A treatise on butter-making, were there room for it here, would not suffice. Butter was made at the fair by the senior class in dairying of the Agricultural college. It was not the same in quality each day, although made by the same parties. The difference was due to the different conditions of the milk on different days. We can not get around the fact that there are two parties to the manufacture of butter—the maker of the butter and the producer of the milk. Perfect butter can no more be made from faulty milk than perfect bread can be made from faulty flour.

"Some of the milk delivered at the dairy hall of the fair was furnished by a milk farmer who understood how to handle milk. It was always good. Some of it was gathered from patrons of a creamery where the patrons had not yet been properly trained, and some of this milk was passable and some

was unfit for use; none of it was prime. After certain rules were made for the management of this milk it improved and the butter made improved. The distinction between milk properly handled and milk not properly handled was so evident that it is taken as an illustration, and the lesson will be impressed as plainly as practicable by applying it to the exhibit of butter as a whole.

"The highest scoring butter came from Cedar Falls. Let us see about the milk in this case. The maker of it has for years been a successful private dairyman. To be a successful private dairyman requires that one must understand the whole business, from the care of the milk to the sale of the butter. He uses a standard separator of 1,000 pounds capacity and runs it with a two horse tread power. His butter was entered in class 193, and this class is described as "creamery butter made from whole milk." Some have questioned his right to enter in this class, and a comment was made at the last Iowa dairy convention which makes it proper to state the exact conditions. The rule governing entries at the state fair reads as follows: "Butter from the milk of a single herd of cows owned by one person, firm or company, and made on the premises where the milk is produced, shall be classed as dairy butter. Butter from the mixed milk or cream gathered and brought to the factory from two or more herds owned by different persons, and made in a factory, shall be classed as creamery butter." Now as to the application. When the milk is flush, Mr. Pierce runs a private dairy, using only his own milk; when his own milk is not sufficient for his needs he buys milk from his neighbors, and this was the case when his exhibition butter was made. It was from the mixed milk of different herds owned by different persons. And here is an important point: Mr. Pierce separates the fresh milk. He takes his own milk fresh from the cows and the milk he buys is taken directly after it is milked. The milk he used is in good condition, and all that is necessary to make sure of good butter every time is to have a good butter-maker.

"Now let us compare it with butter that scored but one point lower, and this because it was one point off on salt. Flavor is the point under discussion, as salt is wholly under the control of the butter-maker. There was butter exhibited which scored the same in flavor, and the milk was—some of it—hailed for ten miles or more, and in hot weather. Yet skill on the part

of the producers of the milk and the observance of proper rules by the milk haulers made themselves manifest. This butter was made by the dairy instructor at Ames.

"The right kind of rules, faithfully followed, will result in delivering milk at the factory from which butter with good flavor can be made. The milking must be done in a cleanly way, it must be cooled unless it is taken direct to the factory and even then if taken far. To put the lid down tight on a can of warm milk will result in tainted milk in a short time, and to mix the fresh, warm milk with old milk will spoil the whole, if given time. The cans must be thoroughly scalded. Two cans of milk were brought to the dairy hall which had been milked and put into cans washed and rinsed in cold water, and brought to the dairy hall the same night it was milked, but the road was long. The milk was not fit for use. The farmers who furnished the milk were much surprised, but they should not have been.

"There is another point in regard to flavor that milk producers must heed or our butter will not gain the high name desired. To illustrate: A creamery man owns a creamery near Des Moines and one in Black Hawk county. He made an exhibit from the creamery most remote and none from the creamery close by. He has skilled butter-makers in both creameries, but the butter from the northern creamery is much better in the fall than from the other. The reason is the presence of rag weeds in the pastures near Des Moines and freedom from them in northern Iowa. So the butter was shipped from Jesup, going over two roads, and it scored ninety-four, while none was shipped from the creamery close to Des Moines on the Great Western. The butter-maker says that if he could induce the farmers to mow the rag weeds he would like to exhibit the butter and show what he can do.

One more caution. This applies to the butter after it is made. Butter which was packed in ice and shut in close suffered more loss in flavor in coming to the fair than that which was not. It went off in flavor and the tubs were quite mouldy. Dry cold is good, wet cold is bad."

NEEDS OF THE DAIRY DEPARTMENT OF THE STATE FAIR.

Mr. Bennett is an earnest and hard worker, and has given much time and study to the dairy interests. He should have the hearty support and co-operation of the agricultural society. Larger premiums should be offered, and an interest worked up in every dairy county in the state. Entries of products from our very best butter and cheese-makers should be encouraged. In this way a high standard of exhibits can be maintained, that will compare favorably with those of other states. The dairy building on the fair grounds is poorly arranged, and needs important changes. Everybody and everything connected with an exhibition are crowded together, and much dissatisfaction exists among exhibitors. The dairy class from the Agricultural college is badly handicapped for the want of room. The machine and supply men should be given a better opportunity to show the people what they have of interest to them. Their assistance is greatly needed in making an exhibition a success.

The refrigerator is now badly located as it divides the room in such a manner as to make part of the building not desirable to exhibitors. It should be located in a more suitable place or in a building erected exclusively for its purpose. The dairy industry of Iowa has now reached so great a point that the fair management should render it the best possible assistance. What other branch of agricultural industry can show a better record? We should lead all our neighboring states in the size and quality of this annual exhibition. Dairy and creamery men should appreciate this fact and increase the exhibits, even if the premiums offered do not compensate for the work and effort necessary in making them. County and state pride should enter largely into the motive.

OFFICIAL INSPECTION OF CREAMERIES AND CHEESE FACTORIES.

The instruction of the people in the line of dairy work in Iowa by the Agricultural college, the experiment station, the State Dairy association, farmers' institutes, the state fair, and the dairy press is of the greatest importance, but it has occurred to me and been frequently suggested that there is a line of work the state through this department should undertake that would bring immediate and practical results in the way of dollars being added to the profits of the patrons and operators of our factories, and in turn increase the resources of the state. I refer to an official inspection of creameries and cheese factories by inspectors or deputies of this department, who are qualified for the positions by education, experience and ability.

Creamery construction, drainage, refrigeration, heating and ventilation, should all be well understood by the inspector. He should have knowledge of the nature of the cow and her product, the management of machinery, engines, boilers, and all appliances used in the manufacture of first class butter and cheese, and in fact should be a master of the business, understanding the entire process from the feeding of the cow until the butter or cheese made from her milk is ready for the market.

The position of state dairy commissioner in Iowa is a police, and not an educational office, except in as far as the enforcement of dairy laws brings to the attention of the creamery man, milk producer, butter dealer, etc., some of the stubborn facts that are connected with the department. The framers of the law of 1886, creating the department, had but the one object in view, the enforcement of the law enacted at that time, having for its purpose the regulation of the manufacture, sale and use of imitation butter and cheese. Since then the duties of the enforcement of the law prohibiting the sale of unclean, impure, adulterated and skimmed milk has been placed in the hands of the commissioner.

The work of the department has extended far beyond the limits prescribed by statute, but the small amount of help allowed and the limited appropriations granted the department made it necessary during the past two years to confine our work to the enforcement of law. There are but two reasons under the law for our visiting creameries, at the expense of the state. One is to detect the unlawful use of neutral, and the other to enforce the law against the sale of adulterated and unclean milk. There have been frequent requests made of the department to visit creameries and investigate the quality of milk delivered. Some complain of low tests, but more on account of tainted, impure and unclean milk. They also represent that efforts made by them to enforce the law would lead in many cases to much trouble in the management and the loss of many good patrons, as well as the ones furnishing the undesirable milk. Many times officers and directors of stock and co-operative companies are the ones complained of, and really do take, in many cases, advantage of their position to impose upon the butter-maker and other patrons. We believe that this condition of things should be remedied, and our only reason for not giving the matter more attention is that the dairy commissioner is the only person connected with the department that can inspect creameries at the expense of the state, and the other duties of the office will not permit the expenditure of funds and time necessary to accomplish the object desired.

I have given this matter a great deal of study, and it is my opinion that the inspection of milk at creameries, as now authorized by law, will be very unsatisfactory, unless authority is given to inspect the creamery as well. It is absolutely foolish to think of improving the output of many factories, by a state inspection, compelling the delivery of clean and wholesome milk of standard quality, unless the inspector has authority to inspect and enforce cleanliness as regards weigh cans, vats, separators, churns, butter workers and other appliances. Other conditions may be wrong; there may be imperfect or no drainage; the skimmed milk or buttermilk tanks may be foul, and so located as to taint every pound of butter or cheese made; ventilation may be poor, the creamery foul and the butter-maker unclean, all or any of which might cause the manufactured article to be injured several cents per pound. Good, nice, clean, high flavored butter is oftentimes injured by the accumulation of one week's make, in a dirty, ill constructed, damp and mouldy refrigerator.

A large per cent of the butter shipped from our state does not reach the top of the market by from 1 to 3 cents per pound. Flavor is the important quality to be attained. Imperfect feeding, unclean and impure milk, on the part of the farmer, unskilled handling by the operator, unclean surroundings, imperfect drainage and refrigeration, will each and all affect the price one or more cents on each pound of butter made.

It is not right for one or more careless patrons to deliver tainted and impure milk, thereby injuring the quality of the output, nor is it just for the operator, through neglect or ignorance, to make a low grade of butter, thereby decreasing the earnings of the patrons having good cows, properly fed, and furnishing the factories first class milk. The state has endeavored to protect the honest patron from his unscrupulous neighbor by making it unlawful to sell or furnish unclean and impure milk on the one hand, and on the other, by establishing a lawful test by which the value in butter fat of each patron's milk may be separately determined. The Babcock test is the lawful system in our state in determining the quality of milk as to its butter fat, and the basis upon which most co-operative creameries pay their dividends, or make monthly settlements with their members and patrons. This system is used by many stock companies and individual operators, and is the basis upon which they pay for milk. The law requires each factory using the Babcock test to keep a certified D. C. test bottle, in order that all test bottles can be tested and the defective ones destroyed. It is a matter of great importance to the patrons to have their factory supplied with correct test bottles, and know that the operator is competent to do the testing and honest in his work. The separator milk and the buttermilk should be tested every day to prevent loss from these sources. The loss of butter fat at the separator and churn is undoubtedly very great in creameries where careless and incompetent operators are employed. The larger part, and in co-operative factories all, of the loss falls upon the patrons. The amount that is paid for milk is governed by the number of pounds of butter made per hundred and the price the product sells for on the market. If the butter is off flavor on account of poor milk, some of the patrons are to blame; if on account of unclean tanks, vats or churns, the operator is at fault. If the drainage, ventilation and refrigeration are poor and defective, the company and stockholders or individual owners are responsible for

the loss. If the loss is at the separator or churn, it is due to poor machinery, or the careless, unskillful handling of the milk. The average patron who is daily sending his milk to the factory has but a general and superficial knowledge of the inside working of the factory, and would not be able to determine, should he try, whether everything was being done right and the business done according to law. You might as well expect that every depositor of a bank could tell by an examination whether his money was safe, as that most patrons could, by inspecting and examining a creamery, tell whether they were being honestly dealt with, and the best possible results in quantity and quality of butter or cheese made were being attained.

NUMBER OF INSPECTORS NEEDED.

There are now about 850 butter and cheese factories in the state and it would require at least three inspectors beside what the commissioner could personally inspect to visit them all during the year. The expense would be between \$5,000 and \$8,000 per year, and is a mere trifle when compared with the results that could be reasonably expected. Seventy million pounds of butter, leaving cheese out of consideration, is the export make of the state in the near future, and an average increase in the selling price of this amount of 1 cent per pound means a saving to the people of our state of \$700,000 annually. This, to say the least, is a very conservative estimate. In this estimate butter made and consumed for home use is not included.

ADDITIONAL WORK FOR INSPECTORS.

Inspectors should be given sufficient power so they would be of service in the enforcement of all dairy laws, and in addition to their legal duties much in the purely educational work could be done. Suggestions and recommendations could be made by them to the owner, manager, butter or cheese-maker, and patrons, while making their inspections, that would be cheerfully received and adopted, and more uniformity would result in the quality and style of our Iowa productions. Their services would be of great value in attending and taking part in dairy discussions at farmers' institutes. Such work could be coupled with their visits to the localities where regular meetings are held so as not to lose much time.

Our agricultural college and experiment station has brought before the intelligent farmers of the state of Iowa a class of

men who are much sought after for institute work. They are men of ability and rank in their profession. Each is master of his particular line and can both entertain and instruct the listener. The commissioner, during the past year, has had many invitations to address gatherings of farmers, and has always complied when his official duties would permit. It should be the aim of this office, if given additional help, to assist in the educational work among the dairy people, which is absolutely necessary in order to have Iowa lead in this great industry. The idea of state inspection of creameries and cheese factories is not new. Other states have adopted a system of this kind and reports of the most satisfactory nature are the result. Canada reaches out in this direction further than any of the states and encourages and instructs her people in the art of manufacturing dairy products. The advancement she has made in the last few years in this direction is perfectly wonderful.

NEW LINE OF WORK.

This department when investigating the subject of filled cheese during the past year was treated with so much cordiality and good feeling by the jobbers of the state that we concluded to ask them to contribute their ideas on the subject of cheese to this department for the benefit of the dairy people. We addressed the following letter to all the jobbers, which will explain itself:

DES MOINES, Iowa, October 10, 1895.

DEAR SIR—There comes into the state annually, for butter alone, shipped to points outside, over \$10,000,000. If to this vast sum be added the value of the immense amount which is consumed by our own people, it will at once be seen that the butter branch of the dairy industry in Iowa is of great importance. But how different is the other important branch of the dairy industry, the production of cheese? Our data of facts connected with cheese is so limited that but little is known regarding it.

It is for this reason I am endeavoring to gather information that will be of value and assistance in stimulating an interest among our dairymen, to the end, at least, that a sufficient amount of cheese may be produced in Iowa to supply the home demand, trusting that when this is accomplished the production may increase to such an amount that we will become exporters of this valuable food product, rather than importers. Remembering the interest taken by the jobbers when called upon to assist in

driving "filled cheese" from our borders, I feel warranted in asking them to contribute all the information possible, so as to place before the public, and especially the dairymen, some facts connected with this industry. Enclosed will be found a blank containing the questions, which I deem important, and will be pleased to have you answer. I trust all dealers will comply with this request and you may rest assured that all information and suggestions imparted will be treated as strictly confidential and used only in a general way in connection with the ninth annual report, and to further the interests of all concerned, be they manufacturers, jobbers or consumers.

Respectfully yours,

(Signed) W. K. BOARDMAN,
State Dairy Commissioner.

THE QUESTIONS ASKED.

1. Number of pounds of cheese sold during the year ending October 1, 1895?
2. Value of same?
3. What per cent of sales or number of pounds was of Iowa production?
4. Value of cheese sold of Iowa production?
5. Principal markets from which cheese is obtained not of Iowa production?
6. Principal reasons for handling cheese not of Iowa production?
7. Estimate the per cent of cheese sold directly to retailers by manufacturers or jobbers not located in Iowa, in the territory covered by your firm?
8. What advantages, if any, have these jobbers in the sale of cheese over Iowa jobbers?
9. Is the demand for cheese in Iowa decreasing or increasing?
10. If decreasing or increasing, why?
11. What kind and quality of cheese most desirable for Iowa trade?
12. Also mention any other particulars you may deem of importance in this connection.
13. What changes, if any, would you recommend Iowa manufacturers to adopt in the manufacture of their product?

The replies to the questions asked are as follows:

[The number appended to each answer corresponds with the number of the question it refers to.]

REPORT NO. 1.

1. 85,000 pounds.
2. \$6,800.

3. 20,000 pounds.
4. \$1,500.
5. Wisconsin, 60,000; New York, 5,000.
6. Superior quality, more uniform and always ready supply.
7. We have no means of telling, but considerable.
8. They have no real advantage, but confining themselves to this line, they have better faculties of making the retailer believe he can do better and selling inferior goods.
9. Think it is increasing.
10. There is a better quality of cheese sold now than in former years, and the price has been low enough to place it within reach of all, poor and rich alike.
11. Mostly new; mild but rich; full cream. Medium texture, a little firm for warm weather; of medium moisture, natural color (some white).
12. Flat cheese, two in a box (twins), weighing about twenty-five to thirty pounds each, are best sellers. Some young Americas and some small cheddars of forty to fifty pounds.
13. Make better quality and put them up in better style; a little saved on the boxes is most of the time very expensive to the shipper. Uniform quality, as good as cheese can be made, will find ready sale most all the time.

REPORT NO. 2.

1. 95,000 pounds.
2. \$9,500.
3. 75 per cent.
4. \$7,000.
5. Chicago and Wisconsin points.
6. We have quite a demand for domestic, limberger and Swiss cheese; also for brick cheese. This class of cheese is not made in Iowa.
7. 50 per cent in this section of our state.
8. None.
9. Increasing, for full, rich, cream cheese.
11. Moist, a mild, rich, soft, medium colored, and strictly full cream, is most desirable for our trade.
13. To produce nothing but strictly full cream cheese, and let them be mild, not strong, rich in flavor, and let them cut soft and moist.

REPORT NO. 3.

1. 22,237 pounds.
2. \$2,019.80.
3. 100 per cent.
4. \$2,019.80.
11. New, mild, and of medium texture and color.
13. Make special effort to turn out as good cheese as are made by New York manufacturers.

REPORT NO. 4.

1. 61,307 pounds.
2. \$5,014.51.
3. 59,766 pounds.
4. \$1,906.44.
5. Chicago and Wisconsin.
6. Iowa cheese good enough for our trade. Handle no outside cheese when we can get stock of Iowa manufacturer.
8. None that I know of.
9. Think increasing each year.
11. New, mild, medium in texture, moisture and color.

REPORT NO. 5.

1. 193,536 pounds.
2. \$16,843.
3. 1,600 pounds.
4. \$-2.
5. Wisconsin, Illinois and New York.
6. There is no good brick, limberger or Swiss cheese made in this section.
7. Very small per cent.
8. None.
9. Increasing.
10. Increasing; because we are handling the very best we can buy.
11. New, mild, soft, moist, white or grass colored cheese.
13. I would suggest that they make better goods, richer in cream, as near the New York cheese as possible.
14. I believe that a good many more cheese factories could make it pay, if they made first class cheese.

REPORT NO. 6.

1. 125,000 pounds; close estimate.
2. \$12,500.
3. 90 per cent.

4. \$11,000.
5. Wisconsin.
6. Scarcity; some styles, like brick, Swiss and limberger, not made to any extent in our state.
7. 10 to 15 per cent.
8. None.
9. Increasing.
10. Quality in this section is nearer what consumers desire, and they use more of it.
11. New, very new, ten days old in summer, mild, soft, and medium color.
12. Be more particular with the quality of milk they obtain.
13. The factories we distribute from are making satisfactory goods, only not enough of it.

REPORT NO. 7.

1. Between 75,000 and 80,000 pounds.
2. From \$7,000 to \$8,000.
3. One-half of 1 per cent.
5. Neenah, Wis.
6. Better goods.
9. Increasing.
11. New, mild, of medium texture and moisture, white in color.
13. Our experience with Iowa cheese is that the manufacturers don't make it as well, and that it does not keep as well as other cheese. It becomes strong and hard too soon, and has more or less of a sour or bitter taste.

REPORT NO. 8.

1. 550,000 pounds.
2. \$48,000.
5. Wisconsin.
6. Could not get Iowa cheese.
7. 50 per cent.
8. Unlimited supply of cheese.
9. Would increase under good times greatly.
14. New, mild, soft, and medium, moist, and medium color.
13. Have better facilities for handling the home made product, and cater to the demand and not to their own standard of fine cheese.

REPORT NO. 9.

1. 14,728 pounds.
2. \$1,052.16.
3. This was all Iowa cheese from one factory.
4. 100 per cent.
6. Do not handle any when we can get Iowa cheese.
8. Do not know; do not believe they have any, except probably the name "New York Factory," branded on the boxes.
9. Think it is increasing in our territory.
10. Moist, medium in age, not strong, neither too soft or too hard, and with medium color.
12. Flats sell better than cheddars. Young Americas not in favor in our territory.
13. Simply to improve the quality as much as possible; put in neat boxes, plainly stenciled; sell all off quality cheese at less price without brand, as off cheese, as one pound of poor cheese does more harm to the cheese trade than 100 pounds of good cheese does good.

REPORT NO. 10.

1. 35,000 pounds.
2. \$3,000.
3. 4 per cent.
4. About \$3,000.
8. We think in price only.
9. Increasing.
10. Greater demand.
11. Mild, firm, medium moisture and color.
12. Iowa full cream cheese are getting to the front.

REPORT NO. 11.

1. 46,985 pounds.
2. \$3,758.
3. 22 per cent, or 8,345 pounds.
4. \$625.
6. Plymouth, Wis.; Green Bay, Wis.; Little Falls, N. Y.
6. Get better and more uniform goods, better in quality and better moulded and better in appearance generally.
7. Not very much sold.
8. None.
9. Increasing.
10. Low prices, good quality and greater activity on the part of the merchants to move the goods

11. New and medium aged, with texture soft and medium moist, and medium color.
12. Mix a little more experience and brains with their curd, and, in short, make it a business, and apply themselves just as the successful business man does.

REPORT NO. 12.

1. About 20 tons.
2. \$3,300.
3. About one-third.
4. \$1,100.
5. Wisconsin, New York and Ohio.
6. Not as good average quality, and inability of factories to turn out enough stock to supply us with an even run of cheese.
9. Increasing.
10. Greater consumption.
11. New, mild, firm, moist and colored

REPORT NO. 13.

1. 100,000 pounds.
2. \$15,000.
3. 5 per cent.
4. \$800.
5. Wisconsin and New York.
6. We get better cheese in Wisconsin. We sell about 50,000 pounds of Swiss, brick and limberger.
7. Not much.
8. None.
9. Increasing.
10. The state is growing, and cheese is lower than formerly.
11. Medium as to age, mild, soft, moist and white.
13. Make all kinds of cheese, brick, limberger and Swiss, and use new milk; cheese must be rich. We have to compete with Wisconsin and New York; Wisconsin is making some of the best cheese in the world; Iowa can make just as good.

REPORT NO. 14.

1. 30,000 pounds.
2. \$2,500.
3. 90 per cent.
4. \$2,300.
5. Chicago.

6. When scarce in Iowa.
9. Increasing.
10. New, mild, medium texture, moist and medium color.

REPORT NO. 15.

1. 60,000 pounds.
2. \$8,000.
3. 10 per cent.
4. \$900
5. Sheboygan county, Wisconsin.
6. Wisconsin cheese is of much better flavor, ripens better and is less liable to spoil.
8. None.
9. Increasing for good cheese.
10. Decreasing demand for poor cheese.
11. Medium as to age, good flavor, of medium moisture, texture and also color. White cheese is also desired.
13. Dairies should be better prepared to keep milk in better condition, by cold storage, well ventilated and better care of cheese while curing.

REPORT NO. 16.

1. 100,000 pounds.
2. About \$8,000.
3. One-half.
4. \$4,000.
5. Chicago, Wisconsin and New York.
6. Better quality, and sometimes cannot get Iowa cheese.
9. Increasing.
10. More people learning to eat it.
11. Firm, and full cream.
12. Too much cheap and poor quality in Iowa.
13. High grade and full cream.
14. Iowa cheese quality too poor. New York excels in quality so we buy them. People want good quality.

REPORT NO. 17.

1. 53,145 pounds.
2. \$4,412.67.
3. 37,728 pounds, or 71 per cent
4. \$2,988.28, or 67 per cent.
5. New York, 6,234 pounds; Wisconsin, 9,183 pounds.
6. They are finer texture, firmer made, better flavor, and uniform quality and size.

8. None.
9. Increasing.
10. Increasing, especially in summer months because they are near consigning markets, make lower prices, and low prices made by one jobber forces his competitor to hunt goods of like quality and price.
11. New and medium as to age, mild and medium in flavor, firm and medium color.
13. Too many Iowa cheese are "honey-comb," or full of little cells, too soft, and hence swell easily. Put on market too green, hence are too soft and spongy and swell badly in hot weather. They sometimes fall down and run out when cut. They are not made firm enough, especially in some sections. We do not mean to keep cheese until it becomes strong, but want it to be cured and firm.

REPORT NO. 18.

1. Estimated, 5,500 pounds.
2. Value, \$4,950.
3. Not 1 per cent.
5. Illinois and New York.
6. New York cheese much finer than any western cheese we have ever had.
7. 5 per cent.
8. None.
9. We would say increasing.
10. Cannot say, except from natural increase of population.
11. New except fall make, mild, medium, firm, medium as to moisture and white in our section.
12. Fall made cheese well taken care of will remain mild until well into the spring, and is a better quality than summer makes.
13. Extra care in making and always making the cheese uniform as to quality, color and size.

REPORT NO. 19.

1. 157,000 pounds.
2. \$15,700.
3. All Iowa productions.
4. \$15,700.
6. Not as good and prefer to patronize home institutions.
8. Not any.
9. Increasing.

11. Medium as to age, mild, soft and firm, moist and medium color.
12. Manufacturers should try to improve the quality, there is room for improvement, and grade should be kept uniform.
13. Make rich cheese, learn to make the best article.
14. It is a science which many makers do not understand. There is too much experimenting on consumers.

REPORT NO. 20.

1. 91,800 pounds.
2. \$7,344.
3. About 90 per cent.
4. \$6,610.
5. Wisconsin and New York.
6. Exhaustion of Iowa stock.
7. 10 per cent or less.
8. None, except exhaustion of Iowa stock.
9. Increasing.
10. By being more generally used as a food.
11. New, mild, of medium texture, moisture and color.
12. The keeping quality of Iowa make could be improved.
13. To make a firmer, richer, better keeping goods.
14. Iowa cheese does not stand well in the general markets outside of the state on account of the above deficiency.

The taste of the average Iowa consumer is for a new, mild, medium, soft cheese, which is not the best grade commercially speaking. There is some change however, going on in this respect, and there is getting to be more demand for the best New York grades, which have a richer, firmer and better flavor, being in fact the best cheese commercially speaking. We know of no product of Iowa that equals the better New York makes. The many small factories in operation result in a varying grade of goods. The cheese-makers of Iowa are badly in need of organization, by which their product could be pooled, and subjected to inspection, and put on the market in established grades. This would compel the factories to produce goods that would pass inspection and would result in getting better prices.

There is a great desire with dealers to use Iowa cheese, but most of them complain that in quality, style and uniformity, they are not up to the New York standard, and that the factories are small, varying so much in the manner of making, that it is difficult to get uniformity where they handle the products

of several factories, also that at all times of the year the supply of Iowa cheese is not equal to their demands. It should be the aim of this department, if suitable assistance and reasonable appropriation were given, to correct the faults pointed out in these answers made by the Iowa jobbers, and develop this side of the dairy industry. This is but one of the many ways in which this great industry could be assisted, and the people of the state benefited.

CREAMERIES AND CHEESE FACTORIES

HOW INFORMATION IS OBTAINED.

The results of our investigation into the number, kind, location and many other facts relating to the creameries and cheese factories of the state, are published, following this article, in tabulated form. Separate tables have been compiled for the creameries and cheese factories; in previous reports they have been listed together. As shown by the tables, there has been quite a decrease in the number of creameries. This is more apparent than real. Greater care has been exercised this year in gathering statistics, eliminating as much as possible the chance of error. Last year we found managers of creameries and factories very backward in, and objected to, filling out blanks sent them for the purpose of reporting to this department. This obliged us to obtain information regarding those not reporting, the best we could from one or more active operators in each county. This year the tables are made up almost entirely from reports made by the managers, secretaries or proprietors of factories. A marked improvement has been made in this respect. They are learning that no improper or objectionable use will be made of the information furnished, and that the private business of each factory will be carefully guarded. During the year a record was kept of the building of new factories, as well as of those burned. The dairy journals were of much assistance in this connection.

Blanks for the purpose of making a report to this office were sent to all the creameries and cheese factories appearing on our last year's list, and to all the new factories that were known to us. This work commenced early in August, and the last appeal was made about the middle of October. To all those not reporting, we sent additional blanks, to some as many as three times. Letters of request accompanied these blanks, besides these two other circular letters were sent urging the reports to be made.

The middle of October a list was made of all factories from whom reports had not been received, and a personal investigation, as far as possible, was made to ascertain if they were still in operation. If there are factories not listed the blame for not making the best possible showing for their county and state must rest with those in charge. This department has done everything in its power, considering the means at hand, to make these statistics as complete as possible.

These facts and figures are sought after by our senators and congressmen, and by the agricultural department at Washington. Experiment stations and agricultural colleges are deeply interested in all matters of this kind, and reliable information of this nature is made good use of by them.

This department feels under many obligations to all those who have made answer to our inquiries. They deserve the thanks of all our people. But, on the other hand, the failure of those interested in this great industry to fully comply, where the facts were known, with our reasonable requests, is to be strongly condemned. Every good citizen should be willing to devote enough of his time to furnish such facts and figures regarding his business as necessary to assist in making a complete record of that particular industry, provided the information given shall not result in any personal injury to himself or his business, and would be of much advantage to the people of the state at large. The state of Iowa maintains this department for the benefit of the dairy industry and the protection of her people. It seems to me a law governing the taking of statistics, compelling owners and operators of factories to answer all reasonable questions at least once a year, when requested by the department, would meet the present needs. If these statistics are of importance, which no one can doubt, their value will be much enhanced if made complete and absolutely accurate.

WHAT THE TABLES SHOW.

From the tables it will be seen that there has been a decrease of eighty and an increase of forty-eight creameries in the different counties, making a net decrease of thirty-two butter factories in the state. The largest decrease appears to be in Jones county, which is accounted for in part by the omission of a line of skim stations belonging to the Diamond Creamery company of Monticello. Their location we were unable to obtain,

and were incorrectly listed as creameries last year. In addition to this, a number of other skim stations that have been closed or not reported, have been omitted from the present list. We have reports of twenty-six creameries burned during the year. A very few of these have been rebuilt. There were fifty-eight that closed and ceased to do business, while on the other hand sixty new creameries were built and thirty-four old ones remodeled. The counties of Appanoose, Fremont, Harrison and Woodbury are the only ones in the state without a creamery.

WHEN IOWA CREAMERIES WERE BUILT.

For the sake of information we placed on our blank this year, "When was your creamery built?" Out of the 774 creameries 590 answers were received, from which we have the following:

Creameries built from 1870 to 1875.....	8
Creameries built from 1875 to 1880.....	36
Creameries built from 1880 to 1885.....	41
Creameries built from 1885 to 1890.....	172
Creameries built from 1890 to 1895.....	323
Total.....	590

COUNTIES HAVING TEN OR MORE CREAMERIES.

The following counties had ten or more creameries in operation during the past year, and, for the sake of comparison, the number credited to each in the last report is also given, as follows:

	1894.	1895.
Linn.....	33	29
Bremer.....	29	28
Dubuque.....	29	27
Delaware.....	31	26
Fayette.....	22	23
Black Hawk.....	22	22
Clayton.....	22	22
Jones.....	31	21
Chickasaw.....	17	19
Winneshek.....	21	19
Butler.....	19	17
Grundy.....	17	17
Kossuth.....	17	17
Buchanan.....	18	16
Palo Alto.....	15	16
Story.....	14	15
Sac.....	14	14
Allamakee.....	12	14

	1894.	1895.
Cerro Gordo.....	12	12
Benton.....	11	10
Cedar.....	16	10
Clinton.....	12	10
Jasper.....	9	10
Mitchell.....	11	10
Webster.....	9	10

In 7 counties there is a gain of 9 over 1894.

In 12 counties there was a loss of 38 from 1894.

Six of the counties report no change.

From this table it will be seen there was a gain of 9 creameries confined to 7 counties, and a loss of 38 in 12 counties, and showing a net loss of 29 in the best dairy counties of the state. This leaves a gain of 89 and a loss of 42, or a net loss of 3 in the smaller dairy counties, with a total net loss, as stated before, of 32 in the state. These figures go to show that the newer dairy districts are holding their own in the number of creameries, while the older districts show a decrease. A reason for this may be advanced. In the newer dairy counties of the state there is plenty of unoccupied territory for growth and development and the building of new creameries, but in the older districts the territory is well occupied, and in many places factories are so close to one another that their patronage is not sufficient without infringing upon the territory of their competitors, thus causing strife, which finally ends in many cases with failure and a creamery for sale. There were 60 new creameries built during the year. Forty of them were built in the small dairy counties and 20 in the larger.

HOW OPERATED, ETC.

Of the 774 creameries, 381 are operated by individuals, 276 by co-operative and 116 by stock companies. Of the 81 cheese factories, 57 are individual, 7 are co-operative and 16 stock companies. The one not classified, in both the creamery and cheese factory lists under this heading, is at Ames, and belongs to the state of Iowa.

There has been a decrease in the individual and stock company creameries during the past year, and an increase in those operated on the co-operative plan. The different systems used are about in the same proportion as last year. Of the 773 reporting, 540 use the separator entirely, 126 gathered cream, and 107 combine the two systems. Six hundred and thirty-five creameries report on the manner of receiving milk, 484 receiving by the test or the relative value plan, and 151 by the hundred

weight. Seventy-five cheese factories report on the same subject; twenty use the test, and 55 by weight. The change is strongly in favor of the test in receiving milk for the manufacture of butter. The cheese factories do not seem to take to this method. The reason may be that many of the factories are small, and inexperienced with the method. We are very much in favor of the use of the test in the receiving of milk for both creamery and cheese factories. It is the only safe and equitable plan, and protects alike the proprietor and patron. Five hundred and eighty-two creameries report on the length of time the creameries were operated for the year ending May 1, 1895. Four hundred and seventy-three were in operation the entire year, 86 between six months and a year, and 23 less than six months. The average time for the 582 was ten and one-third months. Sixty-three cheese factories reported on the same subject. Fourteen were operated the entire year, 35 for six months or more, 11 less than six months, making an average of four and one-half months.

NUMBER OF EMPLOYES, PATRONS AND COWS.

Six hundred and twenty-two creameries and 70 cheese factories report the following employes: Butter makers 22, cheese-makers 69, assistant butter-makers or helpers 331, assistant cheese makers 19, milk and cream gatherers 2,518, making a total of 3,559 employed in the 692 factories. The total number of cream and cheese factories, enumerating the combined factories but once, is 839. Taking the above figures as a basis, there are 4,315 employed in the gathering of milk and the manufacturing of cheese and creamery butter, in the 839 factories in the state.

Five hundred and twenty-five creameries report 54,204 patrons. This is an average of a little over 103 to each factory, and about 80,000 patrons for the 774 creameries. Fifty cheese factories report 1,378 patrons, an average of about 28, which would indicate 1,820 for the 65 exclusive cheese factories. Five hundred and sixteen creameries report patrons furnishing milk from 440,760 cows, an average of 854 cows for each creamery, and at this rate 680,998 cows for the 774 creameries. Fifty cheese factories report 11,395 cows or 224 to each factory, making 14,560 for the 65 exclusive cheese factories. The information obtained as to the number of cows from which milk is furnished seems to be the least reliable of any. Many creameries and factories report not knowing, others give a wide range

in stating the average per patron. It would appear that operators are not well informed on this important feature of their business. I would suggest that they become more familiar with this subject so that in the future more accurate and reliable figures may be obtained.

VALUE OF FACTORIES, WAGES PAID EMPLOYEES.

Six hundred and sixty-one creameries report \$2,046,325 as the value of their plants, an average of \$3,096, which would amount to \$2,396,400 for the 774 creameries. Sixty-one cheese factories have a value of \$110,320, an average of about \$1,500, making a total of about \$2,500,000 invested in creameries and cheese factories in the state. Five hundred and twenty-five creameries report \$285,299 paid to chief butter-makers, or an average of \$51.85 per month. For assistant helpers and butter-makers, \$72,089, a total of \$357,388 for help in the creameries, an average of \$650 per year, which would make \$526,320 for the 774 creameries. As a large part of the cheese is manufactured by the pound or for a stated per cent, the amount paid for help is difficult to obtain.

AMOUNT AND VALUE OF OUTPUT.

Four hundred and thirty-six creameries received 836,369,710 pounds of milk, and made 33,167,198 pounds of separator butter, which makes an average of 88,044 pounds of butter per creamery and 1 pound of butter to every 21 1-10 pounds of milk. Five hundred and forty-nine creameries of all kinds report a make of 50,039,994 pounds of butter, and value the same at \$9,408,468, or 91,165 pounds with a value of \$17,137 per creamery. On this basis the 774 creameries made 70,561,710 pounds with a value of over \$13,000,000. These figures are for the year ending May 1, 1895, which time includes the great drouth of the summer of 1894. Fifty-nine cheese factories for the same period received 25,468,609 pounds of milk, and manufactured cheese as follows: 1,837,715 pounds of cheddar, 153,840 pounds of Swiss, 33,175 pounds of limberger, 19,400 brick, and 394,430 pounds not named, making a total of 2,438,560 pounds, which is 10.44 pounds of milk to one of cheese. The value of this cheese is given as \$220,880.35. The average per factory is \$3,740, or a total value at the same ratio for the 81 factories of \$303,264. Forty cheese factories report having sold \$146,509.70 of their product in Iowa. If the balance that failed to report on this point found the same home market, but little of our cheese is consumed outside of the state.

CREAMERY LIST.

List of creameries in the state, alphabetically arranged according to counties and towns, near where creamery is located, together with information pertaining to each.

Office record number.	LOCATED AT OR NEAR.	NAME OF CREAMERY.	Operated by an individual, co-stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF BUTTER-MAKER.	Separator, gath-er-up cream, or both.	Method of receiving the test or by the test or by the hundred.	Bulky commis-sioner bottle number.
1	Adair County.	Adair Creamery.....	Ind...	Rowell & Beck	Adair.....	Adair.....	Proprietors	Sep'tr	Test..	615
2	Fontanelle.....	Blue Grass Creamery.....	Ind...	A. L. Stewart & Co.	Fontanelle.....	Fontanelle.....	W. F. Stewart	Sep'tr	Hd.	
3	Greenfield.....	Greenfield Creamery.....	Ind...	J. W. Denby.....	Greenfield.....	Greenfield.....	J. C. Sanders	Sep'tr	Hd.	
4	Hebron.....	Hebron Creamery.....	Ind...	A. R. Haskell & Co.	Hebron.....	Orient.....	A. R. Haskell..	S. & G. C.	Test..	646
5	Orient.....	Orient Co-op. B. & C. A.'s	Stk Co	Orient Co-op. B. & C. A.	Orient.....	Orient.....	H. Cowperthute	Sep'tr	Hd.	
<i>Adams County.</i>										
6	Carl.....	Carl Creamery.....	Ind...	W. F. & G. M. Snodgrass (phry, Jr.	Carl.....	Corning.....	G. M. Snodgrass	Sep'tr	Test..	177
7	Corning.....	Corning Creamery Co.	Ind...	An ferson & Hum-phry, Jr.	Corning.....	Corning.....	J. E. Anderson.	S. & G. C.	Test..	193
8	Ulmer.....	Corning Creamery Co.	Ind...	Anderson & Hum-phry, Jr.	Corning.....	Skim station.		S. & G. C.	Test..	
9	Corning.....	Iowa Butter and Ch. Co.	Stk Co	F. M. Widner, Sec.	Corning.....	Corning.....	Jerome Smith.	Sep'tr	Test..	36
10	*Corning.....	Mercer Center.....	Stk Co	F. M. Widner, Sec.	Corning.....	Skim station.		Sep'tr	Test..	
11	Corning.....	Silver Glen Creamery.	Ind...	Bresce & Anderson.	Corning.....	Corning.....	Will-Bresce.	Sep'tr	Test..	
12	Prescott.....	Prescott But. & Ch. A.'s	Co-op.	C. T. Okey, Sec.	Prescott.....	Prescott.....	C. E. Chawgo.	Sep'tr	Test..	649
13	*Williamson.....	Prescott But. & Ch. A.'s	Co-op.	C. T. Okey, Sec.	Prescott.....	Skim station.		Sep'tr	Test..	
<i>Alamance County.</i>										
14	Clermont.....	Clermont Valley Cr. Co.	Co-op.	A. L. Rasmusen, Sec.	Postville.....	Clermont.....	A. Erickson.	Sep'tr	Test..	648
<i>Ashe County.</i>										
15	*Clermont.....	Clermont Valley Cr. Co.	Co-op.	A. L. Rasmusen, Sec.	Postville.....	Skim station.		Sep'tr	Test..	619
16	Dorchester.....	Ice Cave Creamery Co.	Stk Co	A. O. Elvidge, Sec.	Decorah.....	New Alden.	H. J. Foss.	G. C.		
17	Lansing.....	Ice Cave Creamery Co.	Stk Co	A. O. Elvidge, Sec.	Decorah.....	Lansing.....	Jackson Smith.	G. C.		
18	New Alden.....	Ice Cave Creamery Co.	Stk Co	A. O. Elvidge, Sec.	Decorah.....	New Alden.	E. S. Rice	G. C.		
19	Postville.....	Ice Cave Creamery Co.	Stk Co	A. O. Elvidge, Sec.	Decorah.....	Postville.....	Tom Hyde.	S. & G. C.	Test..	
20	Postville.....	Postville Farm's Co-op.	Co-op.	Ellison Orr, Sec.	Postville.....	Postville.....	G. W. Bellowa.	Sep'tr	Test..	79
21	Quandah.....	Arctic Spring Creamery	Ind...	J. D. Johnson	Quandah.....	Quandah.....	John H. Gaars.	G. C.		
22	*Quandah.....	Arctic Spring Creamery	Ind...	J. D. Johnson	Quandah.....	Skim station.		G. C.		
23	Village Creek.....	Ice Cave Creamery Co.	Stk Co	A. O. Elvidge, Sec.	Decorah.....	Lansing.....	K. Munson.	G. C.		
24	Waterville.....	Frs. Co-op. Cr. & Com. Co.	Co-op.	A. Asleson, Sec.	Waterville.....	Waterville.....	A. Asleson	G. C.		
25	Waukon.....	Ludlow Co-op. Cr'y Co.	Co-op.	A. Y. Winter Sec.	Waukon.....	Waukon.....	Fred Fein.	Sep'tr	Test..	
26	Waukon.....	Lycorgus Creamery.....	Stk Co	G. L. Hubbell, Sec.	Waukon.....	Waukon.....	E. V. Ferris.	G. C.	Test..	65
27	Waukon.....	Oak Leaf Creamery.....	Stk Co	G. L. Hubbell, Sec.	Waukon.....	Waukon.....	C. N. Hart.	S. & G. C.	Test..	125
<i>Audubon County.</i>										
28	Audubon.....	Sharon Creamery Co.	Co-op.	R. Jensen, Sec.	Audubon.....	Audubon.....	R. Jensen.	Sep'tr	Test..	
29	Brayton.....	Danish Cen't Cr'y Co.	Stk Co	George James, Sec.	Eikhorn.....	Brayton.....	P. K. Peterson.	Sep'tr	Test..	708
30	Brayton.....	Oakfield Sep't Cr'y Co.	Co-op.	Jesse Nyman, Sec.	Brayton.....	Brayton.....	A. S. Stone.	Sep'tr	Test..	
31	Exira.....	West Hamlin Cr'y Co.	Co-op.	H. T. Peterson, Sec.	Exira.....	Exira.....	H. P. Peterson.	Sep'tr	Test..	
32	Exira.....	Exira Creamery.....	Ind...	F. F. Wilcox.	Exira.....	Exira.....	J. Anderson	G. C.		
33	Kimballton.....	The Danish Sep't Cr'y Co.	Co-op.	O. H. Jacobson, Sec.	Kimballton.....	Audubon.....		Sep'tr	Test..	
<i>Benton County.</i>										
34	Atkins.....	Premont Creamery Co.	Stk Co	H. Fritz, Sec.	Atkins.....	Atkins.....	Charles Ross	Sep'tr	Test..	286
35	Belle Plaine.....	"Belle".....	Co-op.	Broody Bros.	Tama.....	Belle Plaine.		Sep'tr	Test..	
36	Blairstown.....	Leroy Creamery Ass'n.	Co-op.	G. M. Kirk	Blairstown.....	Blairstown.....	S. H. Robertson.	Sep'tr	Test..	436
37	Garrison.....	Star Creamery Ass'n.	Co-op.	Geo. H. Speck, Sec.	Garrison.....	Garrison.....	F. M. Huyck.	Sep'tr	Test..	7
38	Shellsburg.....	Shellsburg.....	Ind...	W. R. McGregor & Co.	Shellsburg.....	Shellsburg.....	Proprietor	Sep'tr	Hd.	95

CREAMERY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CREAMERY.	Operated by an individual, co-op., stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF BUTTER MAKER.	Separator, gath-ered cream, or both.	Method of receiving the milk or by the hundred.	Dairy commis-sioner's bot-tle number.
39	Benton County, Urbana.....	Farmers' Co-op Cr'y Co.	Co-op.	T. H. Remer, Sec.	Urbana.....	Center Point.	Clarence Fisher	Sep'tr.	Test.	56
40	Van Horn.....	Van Horn.	Ind.	Gardiners McKenna	Van Horn.....	Van Horn.	Geo. Gardner.	S. & G.C.	Hd.	
41	Vinton.....	Vinton Creamery.....	Ind.	Rowe Bros.	Vinton.....	Vinton.....	E. O. Rowe.....	S. & G.C.	Test.	
42	Walford.....	The Walford Creamery.	Ind.	F. A. Novak	Walford.....	Walford.....	W. H. Lewis.....	Sep'tr.	Test.	155
43	*Danforth.....	The Walford Creamery.	Ind.	F. A. Novak	Walford.....	Silm station.		Sep'tr.	Test.	
44	Black Hawk County, Cedar Falls.....	Benson Dairy Co.	Co-op.	Wm. Morgan, Sec.	Cedar Falls.....	Benson.....	George Thayer.	Sep'tr.	Test.	660
45	Cedar Falls.....	Black Hawk Cr'y Co.	Co-op.	J. C. Fikins, Sec.	Cedar Falls.....	Cedar Falls.....	John Smith	Sep'tr.	Test.	660
46	Cedar Falls.....	Cedar Falls Co-op Cr As	Co-op.	J. M. Helfer, Pres.	Cedar Falls.....	Cedar Falls.....	A. W. Pierce	Sep'tr.	Test.	660
47	Crain Creek.....	J. H. Engelking.....	Ind.	J. H. Engelking.....	Crain Creek.....	Waterloo.....	Proprietor.	Sep'tr.	Hd.....	131
48	Dewar.....	Canfield Co-op Cr'y Co.	Co-op.	Alfred Brown, Pres.	Canfield.....	Dewar.....	O. E. Gaffin.....	Sep'tr.	Test.	702
49	Dewar.....	Pless, Val Dairy Ass'n.	Co-op.	W. F. Garrett, Sec.	Dewar.....	Dewar.....	W. H. Graham.....	Sep'tr.	Test.	2
50	Dunkerton.....	Lester.....	Ind.	Geo. W. Mayerhoff.	Dunkerton.....	Dunkerton.....		Sep'tr.	Test.	271
51	Dunkerton.....	Farmers' Cr'y Ass'n.....	Co-op.	H. Hoofnagle, Pres.	Dunkerton.....	Dunkerton.....	O. G. Alexander	Sep'tr.	Test.	319
52	Eagle Center.....	Eagle Center D'ry Ass'n	Co-op.	T. J. Humphrey, Sec	Eagle Center.....	Waterloo.....	Josiah Hill.....	Sep'tr.	Hd.....	322
53	Edwards.....	Edwards Creamery.....	Ind.	William Widdell.....	Edwards.....	Dunkerton.....	Oswald Speck.....	Sep'tr.	Test.	260
54	Finchford.....	Unlon Creamery Co.....	Co-op.	A. A. Briggs, Sec.	Finchford.....	Winslow.....	A. K. Smith.....	Sep'tr.	Test.	34
55	Gilbertsville.....	Gilbertsville Dairy Ass'n	Co-op.	E. Marlon, Sec.	Gilbertsville.....	Washburn.....	I. I. Chase.....	Sep'tr.	Test.	658
56	Hudson.....	Hudson Co-op Dy Ass'n	Co-op.	D. Bedford, Sec.....	Hudson.....	Hudson.....	B. C. Knudson.	Sep'tr.	Test.	670
57	Hudson.....	Rock Cr'k Fr's Dy Ass'n	Co-op.	W. P. Thompson, Sec	Hudson.....	Hudson.....	Thos Hansen	Sep'tr.	Hd.	
58	Janesville.....	Mt. Vernon Cr'y Co.....	Co-op.	J. E. Rundles, Sec.	Boies.....	Janesville.....	William Trus.	Sep'tr.	Test.	151
59	Jubilee.....	Co-op Cr'y Co of Jubilee	Co-op.	H. G. Koob, Sec.	Jub'lee.....	Jesup.....	H. B. Kanouse.	Sep'tr.	Test.	225
60	La Porte City.....	La Porte Co-op Cr'y.....	Co-op.	Wesley Folges, Sec.	La Porte City.....	La Porte City.....	Oscar Harvey.....	Sep'tr.	Test.	345
61	La Porte City.....	Louise Co op Cr'y Co.	Co-op.	John J. Large, Sec.	La Porte City.....	La Porte City.....	H. L. Shaffer	Sep'tr.	Test.	277
62	Reinbeck.....	Red Bird Creamery Co.	Co-op.	A. Vittum, Sec.....	Reinbeck.....	Reinbeck.....	S. E. Stevens.	Sep'tr.	Test.	680
63	Waterloo.....	Farmers' Dairy Ass'n	Co-op.	D. F. Hoover, Sec.	Waterloo.....	Waterloo.....	Saml Semtzer.	Sep'tr.	Test.	732
64	Waterloo.....	Waterloo No. Star Cr'y.	Ind.	G. V. Fowler, Sec	Waterloo.....	Waterloo.....	Charles Wood.	Sep'tr.	Test.	702
65	Waterloo.....	Waterloo Creamery.....	Ind.	The Fowler Co.	Waterloo.....	Waterloo.....	F. E. Wightman	Sep'tr.	Test.	
66	Boone County, Boone.....	Fountain Creamery.....	Ind.	S. Lelinger.....	Boone.....	Boone.....	W. S. Fey.....	Sep'tr.	Test.	714
67	Luther.....	Luther Sep'tr Cr'y.....	Ind.	E. E. Van Aukon.	Luther.....	Luther.....	W. Dorrell.....	Sep'tr.	Test.	330
68	Mackey.....	Mackey Grove Cr'y.....	Ind.	D. Regoldon.....	Mackey.....	Boone.....	Proprietor.	Sep'tr.	Test.	
69	Madrid.....	Madrid Creamery.....	Ind.	N. Laborde.....	Madrid.....	Madrid.....	Proprietor.	Sep'tr.	Test.	111
70	Ogden.....	Ogden Creamery.....	Ind.	J. P. Cummings.....	Ogden.....	Ogden.....	Proprietor.	G. C.		
71	Bremer County, Bremer.....	Bremer Creamery Co.	Co-op.	F. C. Fohagen, Sec.	Bremer.....	Bremer.....	John Prier.....	Sep'tr.	Test.	327
72	Denver.....	The Farmington Cy Co	Co-op.	Henry Steege, Sec.	Waterloo, R'k	Waterloo.....	Squire Doty.....	Sep'tr.	Test.	203
73	Denver.....	First Maxfield Cr'y Co.	Co-op.	Wm. Millns, Sec	Denver.....	Waverly.....	Herm. Kouske.	Sep'tr.	Hd.	
74	Frederika.....	Douglas Center Cr'y Co.	Co-op.	J. E. Schmalus, Sec.	Frederika.....	Tripoli.....	F. M. Zell.....	Sep'tr.	Test.	
75	Grove Hill.....	Grove Hill Creamery.....	Co-op.	A. F. Gumneltzer, Sec	Grove Hill.....	Fairbank	Frank Daniels.	Sep'tr.	Hd.	644
76	Horton.....	Horton Cr'y Stock Co.	Stk Co	F. L. Thompson, Sec	Horton.....	Plainfield.....	Elmer Potter.	Sep'tr.	Test.	635
77	Janesville.....	Janesville Creamery.....	Ind.	The Fowler Co.....	Waterloo, R'k	Janesville.....	A. M. Royce.....	Sep'tr.	Test.	
78	Klinger.....	Klinger Creamery.....	Ind.	C. H. Diekman.....	Klinger.....	Dunkerton.....	Louis Roberson	Sep'tr.	Hd.	
79	Maxfield.....	Artesian Creamery Co.	Co-op.	H. Graening, Sec.	Maxfield.....	Waverly.....	H. J. Freil.....	Sep'tr.	Hd.	

CREAMERY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CREAMERY.	Operated by an individual, cooperative or stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF BUTTER-MAKER.	Separation method used, cream, or both.	Method of receiving milk—by can, by tub, or by the hundred.	Dairy commissioner's test-number.
80	Bremer County Plainfield.....	Cedar Vale Creamery.....	Co-op.	T. R. Carroll, Sec.	Plainfield.....	Plainfield.....	S. & G. C.	Test..	770	
81	Roxie.....	West Douglas Cr'y Co.	Co-op.	A. Hoppenworth, Sec.	Selge.....	Bremer.....	A. Sadler.....	Sep'tr..	Test..	
82	Sumner.....	Climax Creamery.....	Co-op.	Henry Specht, Sec.	Sumner.....	Sumner.....	Fred Engel.....	Sep'tr..	Hd.	
83	Sumner.....	Little Valley Creamery.....	Stk Co	John Schwake, Sec.	Back Creek.....	Sumner.....	G. E. Blunt.....	Sep'tr..	Test..	
84	Sumner.....	Red Clover Cr'y Co.....	Co-op.	E. Preston, Sec.	Sumner.....	Sumner.....	W. W. Day.....	Sep'tr..	Test..	
85	Sumner.....	Spring Fountain Cr'y Co.	Co-op.	Wm. Meyer, Sec.	Sumner.....	Sumner.....	J. S. Blunt.....	Sep'tr..	Hd.	
86	Sumner.....	Sumner Creamery.....	Ind.	Gardner, Murphy & Co.	Boston, Mass.	Sumner.....	Ben Winks.....	Sep'tr..	Hd.	
87	*Frederika.....	Sumner Creamery.....	Ind.	Gardner, Murphy & Co.	Boston, Mass.	Skim station.....	.....	Sep'tr..	Hd.
88	*Fredricksb'g.	Sumner Creamery.....	Ind.	Gardner, Murphy & Co.	Roston, Mass.	Skim station.....	.....	Sep'tr..	Hd.
89	Tripoli.....	Crane Creek Cr'y Co.....	Co-op.	F. J. Westendorf, Sec.	Tripoli.....	Tripoli.....	W. Ducken.....	Sep'tr..	Hd.	
90	Tripoli.....	Fremont Creamery.....	Co-op.	T. H. Schuknecht, Sec.	Tripoli.....	Tripoli.....	Ed. Richards.....	Sep'tr..	Hd.	
91	Tripoli.....	Golden Key Creamery.....	Ind.	Wm. & H. Meyerhoff	Key.....	Tripoli.....	Proprietor.....	Sep'tr..	Hd.	
92	Tripoli.....	Maxfield Creamery Co.	Stk Co	C. Yanke.....	Knittel.....	Tripoli.....	Henry Thier.....	Sep'tr..	Hd.	
93	Tripoli.....	Potter's Siding.....	Co-op.	Wm. Baney, Sec.	Trtpoli.....	Potter's Siding.....	W. Stegeman.....	Sep'tr..	Hd.	
94	Tripoli.....	Tripoli Creamery Co.....	Co-op.	F. W. Meier, Sec.	Tripoli.....	Tripoli.....	F. C. Oltrogue.....	Sep'tr..	Hd.	
95	Waverly.....	La Fayette.....	Co-op.	B. Carnforth, Sec.	Waverly.....	Waverly.....	C. W. Stockwell.....	Sep'tr..	Test.. 154	
96	Waverly.....	Riverside Creamery.....	Ind.	Edward Brula.....	Waverly.....	Waverly.....	Edward Brula.....	Sep'tr..	Test.. 158	
97	Wapsie.....	Wapsie Valley Cr'y Co.	Co-op.	G. Vanderwalker, Sec.	Key.....	Tripoli.....	Fred Farwell.....	Sep'tr..	Hd..... 159	

98	Waverly.....	Washington.....	Co-op.	Louis Buesing, Sec.	Waverly.....	Waverly.....	Henry Piegors.....	Sep'tr..	Hd..... 687
99	Buchanan County Aurora.....	Elliott & Speed.....	Ind.	Elliott & Speed.....	Aurora.....	Aurora.....	Proprietor.....	Sep'tr..	Test.. 355
100	Brandon.....	Brandon Creamery.....	Ind.	D. A. McLeish.....	Brandon.....	Mt. Auburn.....	Will Briggs.....	Sep'tr..	Test.. 149
101	Fairbank.....	Fairbank F'mrs Cr'y Co.	Co-op.	M. Shomer, Pres.	Fairbank.....	Fairbank.....	Byron Lumes.....	Sep'tr..	Test.. 710
102	Hazleton.....	Hazleton F'mrs Cr'y Co.	Co-op.	L. A. Brush, Sec.	Hazleton.....	Hazleton.....	M. W. Aahly.....	Sep'tr..	Test.. 54
103	Independence.....	Independence.....	Ind.	Weins & Shillinglaw	Independence.....	Independence.....	James McBride.....	Sep'tr..	Test..
104	Independence.....	Vista.....	Co-op.	W. H. Cooke, Sec.	Independence.....	Independence.....	William Evans.....	Sep'tr..	Test.. 750
105	Jesup.....	Jesup Creamery Co.....	Stk Co	James Dalton, Sec.	Jesup.....	Jesup.....	C. B. Fuller.....	Sep'tr..	Test.. 171
106	Lamont.....	Lamont Creamery Co.....	Co-op.	Tom Kelsb, Sec.	Lamont.....	Lamont.....	G. Durlbinger.....	Sep'tr..	Test.. 341
107	Littleton.....	Littleton Co-op. Cr'y Co.	Co-op.	E. B. Barclay, Sec.	Littleton.....	Jesup.....	Enos J. Ford.....	Sep'tr..	Test.. 243
108	Masonville.....	Monti.....	Ind.	J. A. Donnelly.....	Monti.....	Masonville.....	Proprietor.....	Sep'tr..	Hd.
109	Newtonville.....	Newtonville Creamery.....	Ind.	S. S. Cook.....	Newtonville.....	Winthrop.....	Proprietor.....	Sep'tr..	Hd..... 357
110	Otterville.....	Otterville Creamery Co.	Co-op.	G. L. Bright, Sec.	Otterville.....	Independence.....	Martin Yundt.....	Sep'tr..	Test.. 187
111	Quasqueton.....	Quasqueton.....	Ind.	A. P. Burdhus.....	Quasqueton.....	Winthrop.....	O. D. Stapleton.....	Sep'tr..	Test..
112	Rowley.....	Rowley Co-op. Cr'y Co.	Co-op.	A. F. Bosworth, Sec.	Rowley.....	Rowley.....	Jonathan Polan.....	Sep'tr..	Test.. 743
113	Stanley.....	Stanley F'ms Cr'y Ass'n.	Co-op.	S. C. Irvine, Sec.	Stanley.....	Stanley.....	F. W. Strong.....	Sep'tr..	Test..
114	Winthrop.....	Winthrop Creamery.....	Ind.	Plank Bros.....	Winthrop.....	Winthrop.....	Proprietor.....	Sep'tr..	Test.. 173
115	Buena Vista County Alta.....	Alta Creamery.....	Ind.	Clemens & Cornell	Alta.....	Alta.....	W. E. Gurnsey.....	Sep'tr..	Hd..... 313
116	Marathon.....	Marathon Creamery.....	Ind.	E. R. Stangland.....	Marathon.....	Marathon.....	Frank Johnson.....	Sep'tr..	Test.. 89
117	Newell.....	Newell.....	Ind.	C. Nielson.....	Newell.....	Newell.....	George Ellison.....	Sep'tr..	Test.. 353
118	*Newell.....	Boere.....	Ind.	O. Nielson.....	Newell.....	Skim station.....	.....	Sep'tr..	Test..
119	*Newell.....	Cole.....	Ind.	C. Nielson.....	Newell.....	Skim station.....	.....	Sep'tr..	Test..
120	Sioux Rapids.....	Little Sioux B. & Ch. Fty	Stk Co	Talcott & Son.....	Sioux Rapids.....	Sioux Rapids.....	L. H. Talcott.....	Sep'tr..	Test..
121	Butler County Aplington.....	Aplington Creamery.....	Ind.	John Dblings.....	Aplington.....	Aplington.....	John Dbling.....	Sep'tr..	Hd.

CREAMERY LIST—CONTINUED.

Office record number	LOCATED AS OF YEAR.	NAME OF CREAMERY.	Owned by an individual, or operated on stock company.	NAME OF PROPRIETOR, YORK, SECRETARY OR MANAGER.	P. O. ADDRESS FOR RECEIPT-TASK OR RETURN.	SHIPPING STATION.	NAME OF BUTTER-FABRIK.	Separator, gath-ered cream, or both.	Method of receiving milk—by the use of the milk-can.	Dairy committee number.
121	Baldwin County	Hillsville Creamery	Ind.	James F. Johnston.	Hillsville	Bristow	Proprietor	Sep'r.	Hd.	17
122	Aplington	Monroe Central Cr'y.	Co-op.	A. Onyles, Sec.	Aplington	Aplington	William Leavins	Sep'r.	Hd.	18
123	Arcadia	Arden	Ind.	Haven & Moorhead.	Bristow	Bristow	F. McCallig	Sep'r.	Test.	19
124	Austinville	White Rose Creamery	Ind.	Edo Bros & Co	Austinville	Austinville	Sam'l Patterson	Sep'r.	Hd.	20
125	Bristow	Clover Lawn Cr'y.	Ind.	Haven & Moorhead.	Bristow	Bristow	F. Wallis	S. & G. O.	Test.	21
126	Clarksville	Oak Grove Creamery	Co-op.	C. Dwy, Pres.	Clarksville	Clarksville	E. D. Wilcox	S. & G. O.	Test.	22
127	Drumont	Gluttenville Creamery	Co-op.	A. B. Watson, Sec.	Gluttenville	Drumont	James Santos	Sep'r.	Hd.	23
128	Greene	Cold Water Co-op. D. A.	Co-op.	J. W. Williams, Sec.	Greene	Greene	E. F. Johnson	G. C.		24
129	New Hartford	Beaver Creamery Co.	Co-op.	D. L. Harburt, Sec.	New Hartford	New Hartford	Justin Ramsey	Sep'r.	Test.	25
130	New Hartford	New Hartford Cr'y.	Ind.	Walt & Curtis.	New Hartford	New Hartford	W. C. Curtis	Sep'r.	Hd.	26
131	Parkersburg	Diamond Creamery	Ind.	Codner & Palmer.	Parkersburg	Parkersburg	W. H. Codner	Sep'r.	Test.	27
132	Parkersburg	Star Creamery	Ind.	W. J. Daniels.	Parkersburg	Parkersburg	W. Chelland	Sep'r.	Test.	28
133	Shell Rock	Columbia Creamery	Ind.	Isaac Bull.	Coster	Shell Rock	Isaac Bull	Sep'r.	Hd.	29
134	Shell Rock	Hawkeye Creamery	Ind.	E. Tows & Son.	Shell Rock	Shell Rock	Jas. Richardson	Sep'r.	Test.	30
135	Shell Rock	Victor Creamery	Co-op.	J. M. Cuss, Sec.	Waverly	Shell Rock	G. E. Austin	Sep'r.	Test.	31
136	Swanton	Allion Creamery	Co-op.	E. E. Philis, Sec.	Swanton	New Hartford	O. F. Courbat	Sep'r.	Test.	32
137	Golden County	Lake Side Creamery	Ind.	C. J. Hartling, Sec.	Pomeroy	Pomeroy	L. E. Gritz	Sep'r.	Hd.	33
138	Knox									34

139	Lake City	Elm Grove Creamery	Ind.	Pittsimmons Ratio	Elm Grove.	Lake City	J. J. Pittsimmons	Sep'r.	Test.	35
140	Mahone	Williams Creamery	Ind.	R. F. Bewick.	Fon a, P. Co.	Fonda, Pcc. Co.		Sep'r.	Test.	36
141	Pomeroy	Elite Creamery	Ind.	H. Grubbs.	Pomeroy	Pomeroy	J. H. Hanken	Sep'r.	Test.	37
142	Pomeroy		Ind.	Knoke & son	Pomeroy	Pomeroy		Sep'r.	Hd.	38
143	Rockwell City	Rockwell City B. & C. F.	Sik Co.	T. C. Gregg, Sec.	Rockwell City	Rockwell City	T. E. Grady	S. & G. O.	Test.	39
144	Carroll County		Ind.	Ed. Bohker	Arcadia	Arcadia	Orin Madison	Sep'r.	Hd.	40
145	Arcadia	Mount Carmel	Ind.	Ed. Bohker	Arcadia	Skin station.		Sep'r.	Hd.	41
146	Breda	Breda Creamery	Ind.	Ed. Bohker	Arcadia	Breda		Sep'r.	Hd.	42
147	Dodham	Dodham Creamery	Ind.	H. L. Post.	Dodham	Dodham	Proprietor	Sep'r.	Test.	43
148	Halber	Excelsior Creamery	Ind.	Boehler Bros.	Halber	Halber	Proprietor	Sep'r.	Hd.	44
149	Manning	Manning Station.	Ind.	Boehler Bros.	Halber	Skin station		Sep'r.	Hd.	45
150	Roselle	Ross Valley Creamery	Ind.	G. Kohnst.	Roselle	Carroll		Sep'r.	Hd.	46
151	Willey	Willey City Cr'y Co.	Sik Co.	H. Grestman, Mgr.	Willey	Dodham	George Allard	G. C.		47
152	Willey	Willey City Cr'y Co.	Sik Co.	R. Grestman, Mgr.	Willey	Skin station		G. C.		48
153	Osceola County	Lewis Creamery	Sik Co.	Ed. Shere, Leasee.	Lewis	Lewis	Proprietor	G. C.		49
154	Osceola County	Osceola Creamery	Ind.	B. L. Dean	Clarence	Clarence		G. C.		50
155	Durant	Durant But. & Ch. Ass'n	Co-op.	C. Sargent, Sec.	Durant	Durant	Henry Park	S. & G. O.	Test.	51
156	Lowden	Golden Star Creamery	Ind.	Aug. Ehrlich & Co.	Lowden	Lowden	Proprietor	S. & G. O.	Hd.	52
157	Beards		Ind.	Aug. Ehrlich & Co.	Lowden	Skin station		S. & G. O.	Hd.	53
158	Lowden	Union Creamery	Ind.	Hardy & Dows				S. & G. O.	Hd.	54
159	Manitowish	Western Star Creamery	Ind.	H. Hurlbison			Proprietor	G. C.		55
160	Maron	Maron Co-op. Cr'y Co.	Ind.	C. G. Eves	Maron	Maron	Proprietor	G. C.		56
161	Springdale	Hopewell Creamery	Ind.		Springdale	West Branch	Proprietor	Sep'r.	Hd.	57

CREAMERY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CREAMERY.	Organized by an individual, cooperative or stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF BUTTER MARK.	Preparation, pasteurized cream, or both.	Method of receiving milk—by tank or by the barrel.	Entry number of tester's test.
162	Cedar County, Plato.....	Hill Side Factory.....	Ind...	C. G. Eves.....	Springdale.....	Skim station.....		Sep'tr.	Hd.	66
163	Tipton.....	Cedar.....	Ind...	H. L. Dean.....	Tipton.....	Tipton.....		G. O.		
164	Cerro Gordo County, Clear Lake.....	Clear Lake Creamery.....	Ind...	S. Kennedy & Son.....	Mason City.....	Clear Lake.....	K. Kennedy.....	Sep'tr.	Test.	713
165	Clear Lake.....	Model Co-op. Da'y Ass'n	Co-op.	C. Paulson, Pres.....	Clear Lake.....	Clear Lake.....	C. R. Conway.....	Sep'tr.	Test.	297
166	Mason City.....	Mason City Creamery.....	Ind...	H. J. Turner.....	Mason City.....	Mason City.....	Job. Kennedy.....	Sep'tr.	Test.	266
167	Meservey.....	Meservey Creamery.....	Ind...	Jas. E. Hill.....	Meservey.....	Meservey.....	N. J. Kearnan.....	Sep'tr.	Hd.	
168	Owen Center.....	Owen Center Creamery.....	Ind...	Fish & Colvin.....	Rockford.....	Rockford.....	C. T. Fish.....	Sep'tr.	Test.	336
169	Portland.....	Portland Creamery.....	Ind...	Chas. R. Fink.....	Portland.....	Portland.....	A. J. Mitchell.....	Sep'tr.	Test.	65
170	Plymouth.....	Plymouth Creamery.....	Ind...	S. Hactong.....	Plymouth.....	Plymouth.....	Proprietor.....	Sep'tr.	Test.	744
171	Rock Falls.....	Maydower Creamery.....	Ind...	J. F. Cochonour.....	Rock Falls.....	Rock Falls.....	Proprietor.....	S. & G. O.	Test.	150
172	Rockwell.....	Rockwell Creamery Co.	Stk Co	D. Cohalan, Pres.....	Rockwell.....	Rockwell.....	John Garber.....	Sep'tr.	Test.	201
173	Sheffield.....	Sandridge Creamery.....	Stk Co	D. O'Donnell, Sec.....	Rockwell.....	Rockwell.....		Sep'tr.	Test.	
174	Swaledale.....	Swaledale Creamery.....	Ind...		Rockwell.....	Rockwell.....		Sep'tr.	Test.	
175	Thornton.....	Thornton Creamery.....	Ind...	D. W. Kennedy.....	Thornton.....	Thornton.....	J. H. Clark.....	G. C.		
176	Cherokee County, Aurelia.....	Aurelia Creamery.....	Ind...	Marsh & Koban.....	Aurelia.....	Aurelia.....	Pete Madsen.....	Sep'tr.	Hd.	358
177	Cleghorn.....	Cleghorn Creamery.....	Ind...	Robinson Bros.....	Cleghorn.....	Cleghorn.....	C. W. Stevens.....	S. & G. O.	Hd.	
178	Larrabee.....	Larrabee Creamery.....	Ind...	Alex Younger.....	Larrabee.....	Larrabee.....		Sep'tr.	Hd.	
179	Marcus.....	Marcus Creamery.....	Ind...	Barnes Bros.....	Marcus.....	Marcus.....		Sep'tr.	Hd.	
180	Chickasaw County, Alta Vista.....	Alta Vista F'ms Cr'y Ass'n	Co-op.	Wm. Vick, Sec.....	Alta Vista.....	Alta Vista.....	C. C. Capper.....	Sep'tr.	Test.	35
181	Bassett.....	Farmers' Co-op. Ass'n.....	Stk Co	L. J. Young, Sec.....	Bassett.....	Bassett.....		S. & G. O.	Test.	638
182	Boyd.....	Boyd Farmers' Cr'y.....	Co-op.	J. W. Krieger, Sec.....	New Hampton.....	Boyd.....		Sep'tr.	Test.	
183	Deerfield.....	Deerfield Creamery.....	Co-op.	John W. Kane, Pres.....	Deerfield.....	Alta Vista.....	Chas. Meeder.....	Sep'tr.	Test.	675
184	Devon.....	Devon F'ms Cr'y Ass'n	Co-op.	E. P. Sheffield, Sec.....	Devon.....	Devon.....	C. E. Adams.....	Sep'tr.	Test.	301
185	Fred'ricksburg.....	Fred'ricksburg B. F.....	Co-op.	William Bes, Sec.....	Fred'ricksburg.....	Fred'ricksburg.....	F. F. Boebe.....	Sep'tr.	Test.	184
186	Ionia.....	Ionia Farmers' Cr'y Co.	Stk Co					S. & G. O.	Test.	165
187	Jacksonville.....	Jackson Co-op. Cr'y Co.	Co-op.	C. E. Pierce, Sec.....	Lawler.....	New Hampton.....	R. E. White.....	S. & G. O.	Test.	104
188	Jericho.....	Jericho Creamery Ass'n	Co-op.	L. O. Natrig, Sec.....	Jericho.....	New Hampton.....	H. H. Arness.....	Sep'tr.	Test.	
189	Lawler.....	Lawler Creamery Ass'n	Co-op.	J. J. McCarthy, Sec.....	Lawler.....	Lawler.....	J. W. Sullivan.....	Sep'tr.	Test.	531
190	Little Turkey.....	Little Turkey Cr'y Ass'n	Co-op.	A. D. Kishman, Sec.....	Little Turkey.....	Lawler.....	T. S. Larson.....	Sep'tr.	Test.	244
191	Nashua.....	Fremont Creamery Co.	Co-op.	A. M. Bethke, Mgr.....	Nashua.....	Nashua.....		Sep'tr.	Test.	585
192	Nashua.....	Nashua Creamery.....	Co-op.	E. V. R. Ball, Pres.....	Nashua.....	Nashua.....	W. A. Blinn.....	S. & G. O.	Test.	680
193	New Hampton.....	New Hampton.....	Ind...	John H. Kolthoff.....	Williamstown.....	New Hampton.....	Ph. Wesp.....	Sep'tr.	Test.	27
194	N. Washington.....	North Washington F'ms Cr'y Ass'n	Co-op.	Geo. Endolph, Sec.....	N. Washington.....	Devon.....	J. A. Shellenber.....	Sep'tr.	Test.	362
195	Republic.....	Republic Co-op. Cr'y Co.	Co-op.	J. W. Pierce, Sec.....	Republic.....	Nashua.....	J. H. Eckelnie.....	Sep'tr.	Test.	640
196	Williamstown.....	Dresden.....	Ind...	J. H. Kolthoff.....	Williamstown.....	Fred'ricksburg.....	Chas. Struble.....	Sep'tr.	Test.	671
197	Williamstown.....	Williamstown.....	Ind...	J. H. Kolthoff.....	Williamstown.....	New Hampton.....	F. G. Kolthoff.....	Sep'tr.	Test.	35
198	Williamstown.....	Williamstown Cr'y.....	Co-op.	C. Burmaster, Sec.....	Williamstown.....	New Hampton.....	W. R. Leighton.....	S. & G. O.	Test.	
199	Clark County, Woodburn.....	Farmers' B. and C. Ass'n	Stk Co	H. P. Halling, Sec.....	Woodburn.....	Woodburn.....	H. W. Heaslett.....	Sep'tr.	Test.	716
200	Dickens.....	Sioux Valley Cr'y.....	Ind...	C. W. Parsons & Co.	Dickens.....	Dickens.....	Proprietor.....	Sep'tr.	Test.	620
201	Everly.....	Spring Creek.....	Co-op.	Ed Moeler, Sec.....	Everly.....	Everly.....	Chris. Petersen.....	Sep'tr.	Test.	79
202	Fostoria.....	Fostoria.....	Stk Co	B. D. Dunning, Sec.....	Fostoria.....	Fostoria.....	H. A. Shellenber.....	Sep'tr.	Test.	743

CREAMERY LIST—CONTINUED.

Office record number	LOCATED AT OR NEAR	NAME OF CREAMERY.	Operated by an individual, co-operative stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF BUTTER-MAKER.	Separator, creamer, or book.	Method of pasteurizing the milk or the test or by the hundred.	Butter container—skimmer or test-bottle number.
203	Clay County, Marathon	Mud Lake Cr'y Co.	Co-op.	A. H. Davis, Sec.	Marathon	Marathon				
204	Peterson	Crescent	Ind.	Peck & Collins	Peterson	Peterson	E. W. Collins	Sep'tr	Test	375
205	Spencer	Riverton Cr'y Co.	Stk Co	O. B. Ross, Sec.	Spencer	Spencer	O. B. Ross	Sep'tr	Hd.	
206	Clayton County, Edgewood	Fidelity	Ind.	H. F. Beyer	Edgewood	Edgewood	E. J. Whipple	Sep'tr	Test	292
207	Edgewood	Farmers'	Co-op.	I. F. Noble	Edgewood	Edgewood	C. T. Blake	Sep'tr	Test	351
208	Elkport	Bear Creek	Ind.	H. F. Beyer	Edgewood	Edgewood	A. B. Jones	Sep'tr	Test	334
209	Elkader	Elkader	Ind.	Jo. Lamm	Elkader	Elkader	E. J. Geno	Sep'tr	Test	219
210	Elkport	Ice Cave Cr'y Co.	Stk Co	O. E. Elvidge, Sec.	Decorah, Winneshiek Co	Elkport	Ole Houge	Sep'tr	Test	
211	Farmersburg	Farmers'g Co-op. Cr'y Co.	Co-op.	Charles Hinrich, Sec.	Farmersburg	Farmersburg	J. M. Paris	Sep'tr	Test	357
212	Garnaville	Garnaville Farmers' Cr'y Co.	Co-op.	E. W. Kregel, Sec.	Garnaville, Winneshiek Co	Clayton	A. B. Carrier	Sep'tr	Test	198
213	Gilard	Ice Cave Creamery	Stk Co	O. E. Elvidge, Sec.	Decorah, Winneshiek Co	Froelich	L. Bernatz	Sep'tr	Test	
214	Littleport	Communa Cr'y Ass'n.	Co-op.	Henry Wistrick, Sec.	Communia, Winneshiek Co	Littleport	W. Middlestate	Sep'tr	Test	750
215	Littleport	Ice Cave Creamery	Stk Co	O. E. Elvidge, Sec.	Decorah, Winneshiek Co	Littleport	Geo. Gould	Sep'tr	Test	
216	Luana	Luana Farmers' Co-op.	Co-op.	Robt. M. Fonda, Sec.	Luana	Luana	W. S. Gould	Sep'tr	Test	27
217	McGregor	McGregor Creamery	Stk Co	W. L. Knowles, Sec.	McGregor	McGregor	C. C. Corlett	Sep'tr	Test	250
218	Nyburg	Clermont Valley Cr'y Co.	Ind.	J. Rasmussen	Clermont	Clermont		Sep'tr	Test	
219	*Nyburg	Clermont Valley Cr'y Co.	Ind.	J. Rasmussen	Clermont	Skin station		Sep'tr	Test	
220	Osborne	Ice Cave Creamery	Stk Co	O. E. Elvidge, Sec.	Decorah, Winneshiek Co	Osborne	F. J. Schroeder	Sep'tr	Test	165
221	Osterdock	Osterdock Creamery Co.	Stk Co	E. A. Bush, Sec.	Osterdock	Osterdock	H. G. Pratt	Sep'tr	Test	307
222	Read	Read Creamery Co.	Stk Co	H. W. Wilkie, Sec.	Elkader, Winneshiek Co	Elkader	C. G. Smith	Sep'tr	Test	100
223	St. Olaf	Ice Cave Creamery	Stk Co	O. E. Elvidge, Sec.	Decorah, Winneshiek Co	St. Olaf	Clint Carrier	G. C.	Test	161
224	Strawberry Pt.	Strawb'y Pt. F's Cr'y Ass'n.	Co-op.	Jas. Newberry, Sec.	Strawberry Pt.	Strawberry Pt.	H. R. Swartz	Sep'tr	Test	578
225	Volga City	Highland Cr'y Co-op Ass'n.	Co-op.	G. Gregerson, Sec.	Elkader	Elkader	D. Whipple	Sep'tr	Test	198
226	Volga	Volga Co-op Cr'y Co.	Co-op.	J. Fitzpatrick, Sec.	Volga	Volga	B. Jones	Sep'tr	Test	335
227	Watson	Blue Grass Creamery	Co-op.	John Geraghty, Sec.	Watson	Monons	George Twiner	Sep'tr	Test	80
228	Clayton County, Andover	Andover Creamery	Ind.	J. Newman & Co.	Elgin, Ill.	Andover		Sep'tr	Test	
229	Charlotte	Shady Nook Creamery	Ind.	J. Newman & Co.	Elgin, Ill.	Charlotte		Sep'tr	Test	642
230	Delmar	Delmar Creamery	Ind.	J. Newman & Co.	Elgin, Ill.	Delmar		Sep'tr	Test	353
231	Elwood	Elwood Creamery	Ind.	J. Newman & Co.	Elgin, Ill.	Elwood		Sep'tr	Test	
232	Grand Mound	Grand Mound Co-op Cr'y Co.	Stk Co	C. J. Schuster, Sec.	Grand Mound, Iowa	Grand Mound	G. H. Chandler	Sep'tr	Test	
233	Goose Lake	Goose Lake Creamery	Ind.	A. Von Orren	Miles, Jackson	Goose Lake	S. I. Allen	Sep'tr	Test	
234	Low Moor	Low Moor Creamery	Stk Co	J. M. Hellman, Sec.	Low Moor	Low Moor	G. A. Bill	Sep'tr	Test	
235	Quigley	Deep Creek Creamery	Ind.	J. Newman & Co.	Elgin, Ill.	Quigley		Sep'tr	Test	643
236	Toed's Grove	Clover Leaf Creamery	Co-op.	Chas. Allen, Sec.	Toed's Grove	Toed's Grove	Charles Allen	Sep'tr	Test	110
237	Welton	Welton Creamery	Ind.	C. Peterson	Welton	Welton	F. Salsberg	Sep'tr	Test	65
238	Crawford County, Aspinwall	Aspinwall Creamery	Ind.	William Pruter	West Side	Aspinwall		Sep'tr	Test	668
239	Denison	Denison Creamery	Ind.	G. E. North	Denison	Denison	G. E. North	G. C.	Test	191
240	Kiron	Stockholm Creamery	Ind.	Knut C. Mattson	Kiron	Odebolt, Sac Co	Proprietor	Sep'tr	Test	
241	*Kiron	Older Valley Creamery	Ind.	Knut C. Mattson	Kiron	Skin station		Sep'tr	Test	
242	Manilla	Manilla Creamery	Ind.	William Pruter	West Side	Manilla	L. E. Anthony	G. C.	Test	
243	West Side	Hays Township Cr'y.	Ind.	William Pruter, Sr.	West Side	West Side	Hans Rohwer	Sep'tr	Test	696

CREAMERY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CREAMERY.	Owned by an individual, co-op. or stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF BUTTER-MAKER.	Separator, gath-ered cream, or both.	Method of receiving milk—by the barrel, or by the hundred.	Dairy commis-sioner's test-berth number.
244	Dallas County	Adel Creamery.....	Ind.	William M. Greeley.	Adel.....	Adel.....	A. G. Leonard.	Sep'tr.	Test..	621
245	Dexter.....	Dexter Creamery.....	Ind.	K. C. Pierce.....	Dexter.....	Dexter.....	H. F. Pierce.....	Sep'tr.	Test..	180
246	Granger.....	Granger Cr'y & Ch Co.	Stk Co	R. F. Kilpatrick, Sec	Granger.....	Granger.....	L. C. Means.....	Sep'tr.	Test..	183
247	Perry.....	Red Star Creamery.....	Ind.	J. Moody & Son.....	Perry.....	Perry.....	J. W. Morgan.....	G. C.		
248	Redfield.....	Redfield Co-op Cr'y Co.	Co-op.					Sep'tr.		
249	Van Meter.....	Zieman Creamery.....	Ind.	William Zieman.....	Van Meter.....	Van Meter.....	R. C. Storck.....	S.&G.C.	Test..	281
250	*Van Meter.....	McBride Skim Station.	Ind.	William Zieman.....	Van Meter.....	Skim station		S.&G.C.	Test..	700
251	Waukeo.....	Waukeo Co-op. Cr'y Co.	Co-op.	J. S. Shannon, Sec.....	Waukeo.....	Waukeo.....	M. C. Crispin.....	Sep'tr.	Test..	190
252*	Woodward.....	Woodward Creamery.....	Ind.	H. P. Calenky.....	Woodward.....	Woodward.....	H. P. Calenky.....	S.&G.C.	Test..	304
253	Doris County.	Bloomfield Creamery.....	Ind.	W. H. Davis.....	Bloomfield.....	Bloomfield.....	W. H. Davis.....	G. C.		730
254*	Drakeville.....	Drakeville Dairy Ass'n.	Stk Co	A. Fouts, Sec.....	Drakeville.....	Drakeville.....		Sep'tr.		60
255	Floris.....	Floris Creamery.....	Ind.	C. B. Caldwell & Son	Floris.....	Floris.....		Sep'tr.	Test..	135
256	Pulaski.....	Pulaski Creamery.....	Ind.	J. J. Miller.....	Pulaski.....	Pulaski.....		G. C.		
257*	DeCATa County.	Grand River B. & C. Fty	Stk Co		Grand River.....	Grand River.....		Sep'tr.	Hd.	
258*	Le Roy.....	Le Roy But. & Ch. Fty.	Stk Co	G. M. Pence.....	Le Roy.....	Le Roy.....		Sep'tr.	Hd.	
259	Delaware County.	Almoral.....	Stk Co	F. L. Carpenter, Sec.	Almoral.....	Almoral.....	Ed. M. Newcomb	Sep'tr.	Test..	114
260	Barryville.....	Barryville Co-op. Cr. Co.	Co-op.	Chas. C. Barry, Sec.	Barryville.....	Manchester.....	George Paeker.	Sep'tr.	Test..	740
261	Colesburg.....	Colesburg Creamery Co.	Co-op.	H. C. Currie, Sec.....	Colesburg.....	[Clayton Co. Oterdock	A. Landis, Jr.	Sep'tr.	Test..	285
262	Delaware.....	Delaware Creamery Co.	Co-op.	C. A. Pierce, Sec.....	Delaware.....	Delaware.....	W. H. Cline.....	Sep'tr.	Test..	86
263	Delhi.....	Pleasant Valley Cr'y Co.	Stk Co	J. L. Allison, Sec.....	Delhi.....	Delhi.....	P. F. Madden.....	Sep'tr.	Test..	
264	Delhi.....	Silver Spring Creamery	Stk Co	F. L. Real, Sec.....	Delhi.....	Delhi.....	C. A. Howard.....	Sep'tr.	Test..	141
265	Dundee.....	Dundee Store Creamery	Ind.	A. G. Hazebrieg.....	Dundee.....	Dundee.....	S. M. Hazebrieg.	Sep'tr.	Test..	702
266	Earlville.....	Earlville Creamery.....	Ind.	Klaus & Lemescher.	Earlville.....	Earlville.....	A. C. Bender.....	Sep'tr.	Test..	130
267	Earlville.....	Linwood Creamery Co.	Stk Co	E. Faust, Sec.....	Earlville.....	Earlville.....	A. R. Scott.....	Sep'tr.	Hd.	
268	Ehler.....	Henderson's Creamery.	Ind.	F. Henderson.....	Ehler.....	Ehler.....		Sep'tr.	Test..	
269	Ehler.....	Willow Grove Creamery	Co-op.	E. C. Dolan, Sec.....	Ehler.....	Ehler.....	S. S. McCready.....	Sep'tr.	Test..	763
270	Golden.....	Golden Creamery.....	Ind.	Ancott & Cowl.....	Golden.....	Golden.....		Sep'tr.	Test..	8
271	Greeley.....	Greeley Fm'r's Cr'y Co.	Co-op.	L. Mathews, Sec.....	Greeley.....	Greeley.....	A. F. Carrier.....	Sep'tr.	Test..	370
272	Hazel Green.....	Hazel Green Creamery.	Ind.	Frank E. Dickey.....	Hazel Green.....	Ryan.....	F. L. Houston.....	Sep'tr.	Test..	230
273	*Broadway, Linn county.	Broadway.....	Ind.	Frank E. Dickey.....	Hazel Green.....	Skim station.		Sep'tr.	Test..	
274	Hazel Green.....	Hazel Gr'n Co-op. Cr. Co.	Co-op.	J. A. McBride, Sec.	Hazel Green.....	Hopkinton.....	O. M. Wright.....	Sep'tr.	Test..	115
275	Hopkinton.....	Hopkinton Co-op. Cr. Co.	Co-op.	M. L. McGlade.....	Hopkinton.....	Hopkinton.....		Sep'tr.	Test..	
276	Hopkinton.....	Keystone Creamery.....	Ind.	J. W. Merrill.....	Cedar Falls, Ia.	Hopkinton.....	L. R. Burnham.....	Sep'tr.	Hd.	
277	Manchester.....	Manchester Co. Op. Cr'y.	Co-op.	F. J. Sheldon, Sec.....	Manchester.....	Manchester.....	W. S. Smuroo.....	Sep'tr.	Test..	718
278	Manchester.....	Mend's Creamery.....	Ind.	C. W. Mead & Son.....	Manchester.....	Manchester.....	Proprietor.....	Sep'tr.	Test..	95
279	Manchester.....	Spring Branch Co-op. Cr.	Co-op.	W. J. Davis, Sec.....	Manchester.....	Manchester.....	C. D. Elder.....	Sep'tr.	Test..	76
280	Onedia.....	Onedia Creamery.....	Ind.	Klaus & Irmischer.	Earlville.....	Onedia.....	Thos. Dickson.....	Sep'tr.	Test..	
281	Petersburg.....	Bear Grove Creamery.	Co-op.	Jos. Gehhard, Sec.	Petersburg.....	Dyersville.....	Jacob Schmitt.....	Sep'tr.	Hd.	641
282	Petersburg.....	Petersburg Cr'y Co.....	Co-op.	P. J. Klostermann, Sec	Petersburg.....	Dyersville.....	Frank Rubly.....	Sep'tr.	Hd.	
283	Sand Spring.....	Sand Spring Co-op O. Co.	Co-op.	C. H. Ricketts, Sec.	Sand Spring.....	Sand Spring.....	W. R. Crabb.....	Sep'tr.	Test..	96
284	Thorpe.....	Honey Creek Creamery.	Ind.	H. F. Beyer.....	Edgewood, Ia.	Edgewood.....	W. K. Pollard.....	Sep'tr.	Test..	72

CREAMERY LIST—CONTINUED.

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285	Des Moines County, Burlington	Burlington Creamery	Ind...	Charles Pratt	Burlington	Burlington	Chas. Pratt	G. C.		
286	Dickinson County, Everly	Westport Creamery	Ind...	C. C. Painter	Everly	Everly	C. R. Foster	Sep'tr	Hd	245
287	Spirit Lake	Spirit Lake B & C Fac.	Ind...	C. A. Painter, Sec.	Spirit Lake	Spirit Lake		S & G. C.	Hd.	
288	Dubuque County, Balltown	Balltown Co-op Cr'y Co.	Co-op.	C. Harrington, Sec.	Balltown	Waupaton, Cla-lyton Co	Joseph Platt	Sep'tr	Hd.	
289	Bankston	Woodland Creamery	Ind...	Mrs. M. Farrington & Sons	Bankston	Graf	Barney Ervayn	G. C.		
290	Cascade	Austin Co-op Cr'y	Co-op.	E. W. Dunn, Sec.	Cascade	Cascade	C. M. Hunter	Sep'tr	Hd	705
291	Cascade	Cascade Co-op Cr'y Co.	Co-op.	P. J. Conlin, Sec.	Cascade	Cascade	S. M. Adamson	Sep'tr	Hd.	
292	Cascade	Hazel Creamery	Ind...	W. C. Aitchison	Cascade	Cascade	Proprietor.	Sep'tr	Hd.	
293	Cascade	Spring Valley Cr'y Co.	Co-op.	N. J. Bisenins	Cascade	Worthington	H. P. Bancroft	Sep'tr	Test..	756
294	Cascade	Crystal Falls Cr'y	Ind...	Dehner & Kay	Cascade	Cascade	C. L. Kay	Sep'tr	Hd.	
295	Dubuque	Columbian Creamery	Ind...	Lande Bros.	Rockdale	Dubuque	J. Brazleton	Sep'tr	Test..	361
296	Dubuque	Sherrill Creamery	Co-op.	J. C. Boleyn	Sherrill		Specht's Ferry	Sep'tr	Hd.	
297	Dyersville	Fm's Gl'dn Str Cr'y Co	Co-op.	H. Tegeler, Sec.	Dyersville	Dyersville	A. A. Palmer	Sep'tr	Hd	632
298	Dyersville	Pin Oak Creamery	Co-op.	John Crippes, Sec.	Pin Oak	Dyersville	Jay B. Smith	Sep'tr	Test..	145
299	Epworth	Epworth Creamery Co.	Co-op.	A. B. Wright	Epworth	Epworth	Perry Stockwell	Sep'tr	Hd	674
300	Farley	Farley Creamery Co.	Co-op.	J. F. Schoonover, Sec	Farley	Farley	C. Bluchart	Sep'tr	Test..	659
301	Farley	John's Creek Cr'y	Ind...	Vibber & Heald	Farley	Farley	C. Bartholmew	Sep'tr	Hd.	
302	Farley	Pleasant View Cr'y	Ind...	Vibber & Heald	Farley	Farley	John Higgs	Sep'tr	Hd.	
303	Hempstead	Fillmore Co-op Cr'y Co.	Co-op.	William Craft, Sec.	Fillmore	Fillmore	N. B. Francis	Sep'tr	Hd.	
304	Lattners	Lattner's Sp. Co-op C Co	Co-op.	Oscar J. Endre, Sec.	Lattners	Graf	David Fenton	Sep'tr	Hd	392
305	Lore	Lore Creamery Co.	Co-op.	C. Kemp, Sec.	Lore	Graf		Sep'tr	Hd.	
306	Luxemburg	Globe Creamery	Co-op.	M. Lynch, Sec.	Luxemburg	Dyersville	J. G. Koelker	Sep'tr	Hd	345
307	New Vienna	Hickory Valley Cr'y Co.	Co-op.	W. H. Mels, Sec.	Tivoli	Dyersville	C. H. Arnold	Sep'tr	Hd.	
308	New Vienna	Central Creamery Co.	Stk Co	Jos. Schermann, Sec.	New Vienna	Dyersville	Mathias Kurt	Sep'tr	Hd	719
309	Poosta	Highland Creamery	Ind...	George W. Young	Epworth	Epworth	C. W. Pierce	Sep'tr	Test..	358
310	Rickardsville	Farmers Creamery Co.	Stk Co	John Fisher, Sec.	Rickardsville	Durango	Joseph Farnt	Sep'tr	Hd.	
311	Rickardsville	Oak Grove Cr'y Co.	Co-op.	M. S. Regan	Rickardsville	Waupeton	August Bany	Sep'tr	Hd.	
312	Worthington	Central	Co-op.	J. H. White, Sec.	Worthington	Hopkinton	H. F. Lehmkuhl	Sep'tr	Hd.	
313	Worthington	Worthington Creamery	Ind...	W. Latner, Sec.	Worthington	Worthington	U. Bahler	Sep'tr	Hd.	
314	Zwingle	Zwingle Sep'tr Cr'y	Ind...	J. H. Welty	Zwingle	Zwingle		S & G. C.	Test..	
315	Emmet County, Armstrong	Farmers Creamery Co.	Ind...	Geo. Stewart, Sec.	Armstrong	Armstrong	Fred Wilcox	Sep'tr	Test..	623
316	Armstrong	Forsy the Creamery	Co-op.	H. A. Gaarde, Sec.	Armstrong	Armstrong	Nels Nelson	Sep'tr	Test..	605
317	Estherville	Estherville F. Co-op.	Co-op.	H. W. Woods, Sec.	Estherville	Estherville	A. Vavrickek, Jr	Sep'tr	Test..	611
318	*Estherville	Bagan Station	Co-op.	H. W. Woods, Sec.	Estherville	Estherville		Sep'tr	Test..	
319	Wallingford	Wallingford C. C. Co.	Co-op.	H. K. Groth, Pres.	Wallingford	Wallingford	Ben Lomling	Sep'tr	Test..	310
320	Fayette County, Alpha	Alpha Farmers Cr'y Co.	Co-op.	A. L. Davis, Sec.	Alpha	Waucoma	C. A. Day	Sep'tr	Test..	53
321	Alpha	Bethel Creamery	Stk Co	A. Webster, Pres.	Waucoma	Waucoma	C. N. Beach	Sep'tr	Test..	71
322	Arlington	Brush Creek Farmers	Co-op.	C. H. Day, Sec.	Arlington	Arlington	C. H. Day	Sep'tr	Test..	
323	Aurora	Gundlach Creamery	Ind...	A. O. Kingley	Clayton Co Strawberry Pt	Strawberry Pt	Charles Hill	Sep'tr	Test..	675
324	Dover Mills	Burr Oak Creamery Co.	Co-op.	Henry Smith, Sec.	Clermont	Clermont	S. H. Payne	Sep'tr	Test..	724
325	Eldorado	Eldorado C. R. & C. Co.	Co-op.	C. A. Knudson, Sec	Eldorado	West Union	Dan Rhee	S & G. C.	Test..	

CREAMERY LIST—CONTINUED.

Office number	LOCATED AT OR SEPAR.	NAME OF CREAMERY.	Owned by an individual or stock company.	NAME OF PROPRIETOR, TOL. SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, TOL. SECRETARY OR MANAGER.	MILKING SECTION.	NAME OF BUTTER MAKER.	Proprietor, Rath, or other firm, or both.	Method of receiving the milk—by the test or by the centrifuge.	Butter score, 1889- 1890.
26	Elgin.....	Elgin Fm's Dairy Co.	Co-op.	J. Gehring, Sec.	Elgin, (Ingr Co.)	Elgin.....	Ed Hanson.....	S & G. C.	Test.	287
267	Fairbank.....	Orin Creamery Co.	Co-op.	E. E. Shippy, Sec.	Minkler, Bro.	Fairbank.....	E. E. Shippy.....	Sup'r	Bel.	287
228	Fayette.....	Fayette Creamery	Co-op.	J. M. Edmunds, Sec.	Fayette.....	Fayette.....	J. M. Spear.....	Sup'r	Test.	156
229	Hawkeye.....	Hawkeye Creamery	Ind.	Bortner & Wilkin	Hawkeye.....	Hawkeye.....	A. P. Bortner.....	Sup'r	Test.	362
230	Maynard.....	Horion Creamery	Co-op.	F. M. Beckner, Pres.	Maynard.....	Maynard.....	E. L. Bracy.....	Sup'r	Test.	146
231	Oelwein.....	Jefferson.....	Co-op.	J. B. Meyer, Sec.	Oelwein.....	Oelwein.....	C. H. McQueen.....	Sup'r	Test.	102
232	Oelwein.....	Oelwein Fm's Cr'y Co.	Co-op.	E. E. Day, Sec.	Oelwein.....	Oelwein.....	H. A. Miller.....	Sup'r	Test.	250
233	Randall.....	Fairview Creamery	Co-op.	S. A. Dittel, Sec.	(Ingr Co.)	Randall.....	F. C. Billings.....	Sup'r	Test.	423
234	Randall.....	Randall Creamery	Co-op.	G. D. Torrey, Sec.	Randall.....	Randall.....	F. C. Billings.....	Sup'r	Test.	172
235	Richfield.....	Farmers Creamery	Co-op.	G. E. Murphy.....	Richfield.....	Richfield.....	W. M. Tilton.....	S & G. C.	Test.	58
236	Stanley.....	Stanley Creamery	Co-op.	S. C. Irvine.....	Stanley.....	Stanley.....	Robert Mallis.....	Proprietor	Test.	273
237	St. Lucas.....	The Fm's Coop. Cr'y.	Co-op.	John J. Mills, Sec.	St. Lucas.....	Waucoma.....	J. R. Leslie.....	S & G. C.	Test.	40
238	Waucoma.....	Waucoma Creamery	Six Co.	A. Webster, Pres.	Waucoma.....	Waucoma.....	S. Peterson.....	S & G. C.	Test.	262
239	Westgate.....	Westgate Creamery Co.	Co-op.	Thos. Beeber, Sec.	Westgate.....	Westgate.....				
240	West Union.....	Farmers Dairy Co.	Co-op.	C. P. Lake, Sec.	West Union.....	West Union.....				
241	West Union.....	Union Creamery	Six Co.	E. B. Shaw, Sec.	West Union.....	West Union.....				
242	Wyllis.....	Wyllis.....	Six Co.	E. B. Shaw, Sec.	West Union.....	Skim station.				

243	Floyd County.....	Charles City Creamery	Ind.	Krieger & Board.....	Charles City.....	Charles City.....	Fred Marlett.....	Sup'r	Test.	164
244	Charles City.....	Niles Creamery	Ind.	D. Willard, Sec.	Niles.....	Charles City.....	W. F. Penney.....	Sup'r	Test.	112
245	Floyd.....	Floyd Coop. Cr'y Ass'n	Co-op.	W. J. Emerson.....	Floyd.....	Floyd.....	W. F. Penney.....	G. C.	Test.	69
246	Marble Rock.....	Marble Rock Creamery	Ind.	R. C. Kennedy.....	Marble Rock.....	Marble Rock.....	W. F. Emerson.....	Sup'r	Test.	64
247	Nora Springs.....	Nora Springs Creamery	Ind.	P. H. Powers.....	Nora Springs.....	Nora Springs.....	R. C. Kennedy.....	S & G. C.	Test.	19
248	Powersville.....	Pleasant Grove Cr'y.	Ind.	L. B. Carhart, Sec.	Powersville.....	Powersville.....	W. J. Grimes.....	Sup'r	Test.	
249	Rockford.....	Rockford Co-op. Cr'y Ass'n	Co-op.	O. L. Crowell, Sec.	Rockford.....	Rockford.....	W. J. Grimes.....	G. C.	Test.	70
250	Franklin County.....	Rockford Co-op. Cr'y Ass'n	Co-op.	J. Martin & Son.....	Ackley.....	Ackley.....	G. Stansburg.....	S & G. C.	110.....	
251	Alexander.....	Northern Iowa Cr'y Co.	Six Co.	S. E. Allen, Pres.	Waucoma.....	Alexander.....	L. S. Tupper.....	S & G. C.	Test.	17
252	Chaplin.....	Chaplin Creamery	Ind.	Walker S. Fathum.....	Greens, Butler.....	Chaplin.....	Proprietor.....	Sup'r	Test.	31
253	Faithful.....	Faithful Creamery	Ind.	Zemms Bros.....	Faithful.....	Faithful.....	Proprietor.....	Sup'r	Bel.	113
254	Hampton.....	Pleasant Ridge.....	Ind.	McKellar & Cochran.....	Hampton.....	Hampton.....	Proprietor.....	Sup'r	Test.	113
255	Ladlow.....	Hamilton Cr'y Co-op Co.	Co-op.	F. Badolayev & Son.....	Hampton.....	Hampton.....	J. Christensen.....	Sup'r	Test.	105
256	Reeve.....	Reeve Creamery	Ind.	L. B. Carhart, Sec.	Reeve.....	Reeve.....	G. Triplett.....	Sup'r	Test.	105
257	Shelburne.....	Shelburne Co-op. Cr'y Co.	Co-op.	M. M. Rowland, Sec.	Shelburne.....	Shelburne.....	W. S. Foy.....	Sup'r	Test.	103
258	Adams.....	Adams Co-op. Cr'y Co.	Co-op.	J. M. Tolliver, Sec.	Adams.....	Adams.....	A. J. Davis.....	Sup'r	Test.	104
259	Faithful.....	Faithful Co-op. Cr'y Ass'n	Co-op.	Reeve Bros.....	Faithful.....	Faithful.....	C. L. Rouner.....	Sup'r	Test.	118
260	Grand Junction.....	Bonner's Creamery	Ind.	Geo. E. White.....	Grand Junction.....	Grand Junction.....	B. M. Lamb.....	G. C.	Test.	223
261	Palom.....	Palom Creamery	Ind.	Hickman & Jones.....	Palom.....	Palom.....	E. Tuttle.....	Sup'r	Test.	133
262	Ripley.....	Ripley Creamery	Ind.	L. H. Adams, Sec.	Ripley.....	Ripley.....	Proprietor.....	Sup'r	Test.	267
263	Scranton.....	Scranton Creamery	Six Co.	P. McNeely.....	Scranton.....	Scranton.....	Proprietor.....	G. C.	Test.	267
264	Grand County.....	Roanoke Creamery	Ind.	W. H. Smith, Pres.	Roanoke.....	Roanoke.....	Charles Martin.....	G. C.	Test.	267
265	Conrad Grove.....	Farmers' Co-op. Cr'y Co.	Co-op.		Conrad Grove.....	Conrad Grove.....				

CREAMERY LIST—CONTINUED.

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STATE DAIRY COMMISSIONER.

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Office record number.	LOCATED AT OR NEAR.	NAME OF CREAMERY.	Owned by an individual, cop or stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF BUTTER-MAKER.	Separator, gath-ered cream, or both.	Method of reciev-ing milk—by the hand, or by the hundred.	Dairy commis-sioner's test-plate number.
365	Grundy County, Dairyville.....	Dairyville Creamery.....	Ind.	N. H. Blom.....	Dairyville.....	Butler Co New Hartford.	Peter Larson.....	Sep'tr.	Test.	136
367	Fredsville.....	Fredsville Co-op. Co.....	Co-op.	Chas. Olson, Sec.....	Fredsville.....	Berk Ha'k Co Cedar Falls.	J. Christensen.....	Sep'tr.	Test.	260
368	Grundy Center.....	Beaver Township Cr'y.....	Ind.	J. H. Sperry.....	Grundy Center.....	Grundy Center.....	Louis Cedar.....	Sep'tr.	Hd.	
369	Grundy Center.....	Colfax Creamery.....	Ind.	J. H. Sperry.....	Grundy Center.....	Grundy Center.....		Sep'tr.	Hd.	
370	*Grundy Center.....	J. H. Sperry.....	Ind.	J. H. Sperry.....	Grundy Center.....	Grundy Center.....		Sep'tr.	Hd.	
371	Grundy Center.....	Grundy Center Cr'y.....	Ind.	J. H. Sperry.....	Grundy Center.....	Skim station.....		Sep'tr.	Hd.	
372	Grundy Center.....	Ivester Creamery Co.....	Co-op.	Geo. Schwarck, Sec.....	Ivester.....	Grundy Center.....	Geo. Norison.....	Sep'tr.	Hd.	386
373	Holland.....	Colfax Creamery.....	Ind.	S. Nilssen.....	Holland.....	Wellsburgh.....	Ed. Starr.....	Sep'tr.	Test.	272
374	Holland.....	Holland Creamery.....	Ind.	Freche Bros.....	Holland.....	Holland.....	Proprietor.....	Sep'tr.	Hd.	
375	Morrison.....	Lincoln Spring.....	Ind.	G. H. Patrick.....	Holland.....	Holland.....	Proprietor.....	Sep'tr.	Hd.	
376	Morrison.....	Morrison Creamery Co.....	Ind.	L. A. Larson.....	Lincoln.....	Morrison.....	Proprietor.....	Sep'tr.	Hd.	652
377	New Hartford.....	Fairfield Township Cr'y.....	Ind.	Graham Bros.....	Morrison.....	Morrison.....		Sep'tr.	Test.	
378	Reinbeck.....	Grant Twp. Dairy Ass'n.....	Co-op.	Jas. P. Murphy, Sec.....	New Hartford.....	New Hartford.....		Sep'tr.	Test.	
379	Reinbeck.....	Reinbeck Creamery.....	Ind.	The Fowler Co.....	Reinbeck.....	Reinbeck.....	J. J. Ross.....	Sep'tr.	Test.	
380	Wellsburgh.....	Wellsburgh Creamery.....	Ind.	Martin & Faust.....	Wellsburgh.....	Wellsburgh.....	G. A. Place.....	Sep'tr.	Test.	
381	Guthrie County, Guthrie Center.....	Guthrie Center Cr'y.....	Ind.	A. Wood, Mgr.....	Guthrie Center.....	Wellsburgh.....	Dan Sindy.....	Sep'tr.	Hd.	
382	Yale.....	Yale Creamery.....	Ind.	Jno. Croin.....	Guthrie Center Rock Valley.....	Guthrie Center Yale.....	A. Wood.....	S.&G.C.	Hd.	
								S.&G.C.	Hd.	
Hamilton County.										
383	Elisworth.....	Elisworth Co-op Cr'y As.....	Co-op.	M. H. Brenton, Sec.....	Elisworth.....	Elisworth.....	K. T. Nas.....	Sep'tr.	Test.	282
384	Jewell.....	Jewell Creamery.....	Ind.	Klock Bros. & Co.....	Jewell.....	Jewell.....	H. B. Lomes.....	Sep'tr.	Test.	238
385	Kamrar.....	Gold Nugget Creamery.....	Ind.	D. C. Bailey & Co.....	Kamrar.....	Kamrar.....	D. O. Bailey.....	S.&G.C.	Test.	75
386	Radcliff.....	Lincoln Co-op Cr'y Co.....	Co-op.	Martin Christ'n, Pre.....	Radcliff.....	Radcliff.....	H. Gronbeck.....	Sep'tr.	Test.	44
387	Randall.....	Randall Farmers' Cr'y.....	Co-op.	Jens Clausen, Sec.....	Randall.....	Randall.....	H. N. Miller.....	Sep'tr.	Test.	9
388	Stanhope.....	Stanhope Creamery.....	Ind.	Irving Iverson.....	Stanhope.....	Stanhope.....	Proprietor.....	Sep'tr.	Test.	347
389	Webster City.....	Poplar Grove Cr'y.....	Ind.	N. H. Bowden.....	Poplar Grove.....	Webster City.....	Proprietor.....	Sep'tr.	Hd.	
390	Williams.....	Williams Creamery.....	Ind.	B. G. Clark & Co.....	Webster City.....	Williams.....		G. C.		
Hancock County.										
391	Britt.....	Crystal Creamery Co.....	Co-op.	Ed. Peterson, Sec.....	Britt.....	Britt.....	L. C. Peterson.....	Sep'tr.	Test.	90
392	Corwith.....	Corwith Creamery.....	Ind.	L. S. Potler & Co.....	Corwith.....	Corwith.....	A. H. Adams.....	S.&G.C.	Test.	
393	*Corwith.....	The Kubley Skim House.....	Ind.	L. S. Potler & Co.....	Corwith.....	Skim station.....		S.&G.C.	Test.	
394	Crystal Lake.....	Crystal Lake Creamery.....	Ind.	Oison Bros.....	Wesley, Kas Winneshago Co Forest City.....	Britt.....	G. B. Davonport.....	G. C.		
395	Garner.....	Northern Iowa Cr'y Co.....	Stk Co	S. E. Allen, Pres.....	Forest City.....	Garner.....	W. L. Channer.....	S.&G.C.	Test.	
396	Klemme.....	Klemme Creamery Co.....	Co-op.	Louis Sampson, Sec.....	Klemme.....	Klemme.....	N. L. Palmer.....	G. C.		
397	Madison.....	Madison Creamery.....	Co-op.	C. B. Hanner, Sec.....	Winneshago Co Forest City.....	Forest City.....	Lewis Richards.....	Sep'tr.	Test.	749
Hardin County.										
398	Ackley.....	Johnson Creamery.....	Ind.	J. N. Johnson.....	Ackley.....	Ackley.....	Theo. Newman.....	S.&G.C.	Hd.	
399	Cleves.....	Cleves Creamery.....	Ind.	Sperry & Willo'ghby.....	Grundy Center.....	Grundy Center.....	Geo. Jorgensen.....	Sep'tr.	Hd.	726
400	Hughes.....	Hughes.....	Ind.	G. A. Lusk.....	Hughes.....	Hughes.....	M. E. Hanson.....	S.&G.C.	Test.	218
401	Iowa Falls.....	Stioam Springs Cr'y.....	Ind.	M. L. Powers.....	Iowa Falls.....	Iowa Falls.....		Sep'tr.	Test.	
402	Lawn Hill.....	Lawn Hill Creamery.....	Ind.	Geo. B. Strayer.....	Lawn Hill.....	Lawn Hill.....	Geo. B. Strayer.....	G. C.		51
403	Radcliff.....	The Buckeye Creamery.....	Ind.	Carl Clausung.....	Alden.....	Radcliff.....	Carl Clausung.....	S.&G.C.	Test.	167
404	Robertson.....	Robertson Creamery.....	Ind.	J. Windecker & Sons.....	Robertson.....	Robertson.....	Proprietor.....	Sep'tr.	Hd.	
405	Union.....	Union Creamery Co.....	Co-op.	Thos. E. Culp, Sec.....	Union.....	Union.....	Thos. E. Culp.....	Sep'tr.	Test.	290
406	Whitten.....	Whitten Creamery Co.....	Co-op.	Geo. N. Carr, Sec.....	Whitten.....	Whitten.....	A. P. Codner.....	G. C.		

CREAMERY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CREAMERY.	Operated by an individual, cooperative, or stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF BUTTER-MAKER.	Separator, path-ened cream, or both.	Method of receiving milk—by cans or by the hundred.	Dairy commissioner's test-number.
407	Henry County New London.....	New London Creamery	Ind..	Nugen Bros.....	New London (Huron Co.)	New London		G. C.		
408	Wayland.....	Hickory Grove P's Hry' [Ass'n.]	Co-op.	C. H. Kyes, Sec.	MERTINDALE, JER.	Wayland	David Rich	Sep'tr..	Test..	85
409	Winfield.....	Winfield Creamery.....	Ind..	Elcher Bros.....	Winfield	Winfield	Proprietor	G. U.		
410	Howard County Chester.....	Chester Co-op. Cr'y Co.	Co-op.	E. O. Greene, Sec.	Chester	Chester	E. D. Copper	G. C.		
411	Cresco.....	Cresco Creamery.....	Ind..	W. R. Owens.....	Cresco	Cresco	R. M. Barham	S. & G. C.	Test..	662
412	Cresco.....	Cresco P's factory.	Ind..	Johnson Bros.....	Cresco	Cresco	J. A. Barker	S. & G. C.	Test..	663
413	Elma.....	Ice Cave Creamery Co.	Stock.	O. E. Ovidge, Sec.	Decorah, Win- [oshiek Co.]	Elma	C. W. Baird	S. & G. C.	Test..	196
414	Lime Spring.....	Ice Cave Creamery Co.	Stock.	O. E. Ovidge, Sec.	Decorah, Win- [oshiek Co.]	Lime Spring	A. Galbrouson	S. & G. C.	Test..	105
415	Lourdes.....	Star Creamery.....	Ind..	Caaty & Dickinson.	Lourdes	Elma	Proprietor	S. & G. C.	Test..	62
416	Protovin.....	Protovin Cr'y Ass'n.....	Co-op.	J. J. Lakes, Sec.	Protovin	Cresco	Steven Larson	G. C.		739
417	Humboldt County Bode.....	Bode Creamery Ass'n	Stock.	T. O. Hanson, Sec.	Bode	Bode	John C. Hamer	Sep'tr..	Test..	254
418	Bradgate.....	Bradgate Co-op Cr'y As.	Co-op.	J. L. Van Horn, Sec.	Bradgate	Bradgate	E. M. Vargason	Sep'tr..	Test..	691
419	Humboldt.....	Humboldt B. & C. Ass'n	Co-op.	G. L. Crulshank, S'c	Humboldt [Winneshago Co.]	Humboldt	J. C. Hall	Sep'tr..	Test..	50
420	Livermore.....	Northern Iowa Cr'y Co.	Co-op.	S. E. Allen Pres.	Forest City, [Winneshago Co.]	Livermore	E. Underwood	G. C.		
421	*St. Joseph, Kas	Northern Iowa Cr'y Co.	Co-op.	S. E. Allen, Pres.	Forest City, [Winneshago Co.]	Skim station		S. & G. C.		
422	Benwick.....	Renwick Creamery.....	Ind..	W. T. Drensen & Son	Benwick	Renwick	S. F. Drenner	S. & G. C.	Test..	363
423	Thor.....	Clover Creamery.....	Co-op.	Lewis Olson, Sec.	Thor	Thor	L. J. Thompson	Sep'tr..	Test..	132

424	Ida County Battle Creek.....	Maple Valley Cr'y.....	Ind..	Alex. Crawford.....	Battle Creek..	Battle Creek..	Proprietor.....	G. C.		
425	Galva.....	Galva Creamery.....	Ind..	Robt. Jorgensen.....	Galva.....	Galva.....	Proprietor.....	Sep'tr..	Hd.	
426	Ida Grove.....	Ida Grove Creamery.....	Ind..	Hubbard & Sanders	Ida Grove.....	Ida Grove.....	A. D. Sanders..	G. C.		
427	Ida County Genoa Bluff.....	Genoa Bluff Creamery.	Ind..	G. R. Howard.....	Genoa Bluff	Genoa Bluff		S. & G. C.	Test..	181
428	North English.....	North English Cr'y.....	Ind..	Magoon & O'Brien..	North English	North English	Dick O'Brien..	G. C.		
429	Parnell.....	Parnell Cr'y & Chs Fac.	Ind..	G. E. Nelson.....	Parnell.....	Parnell.....	Proprietor.....	S. & G. C.	Test..	201
430	South Amama.....	Clover Creamery.....	Ind..	D. Sandersfeld.....	South Amama.	Homestead	Proprietor.....	G. C.		138
431	Victor.....	Victor Creamery Co.....	Ind..	A. L. Minshart, Mgr	Victor.....	Victor.....	A. L. Minshart.	G. C.		
432	Williamsburg.....	Williamsburg Cr'y.....	Ind..	J. M. Mathews.....	Williamsburg.	Williamsburg.	Proprietor.....	G. C.		
433	Jackson County Andrew.....	Andrew Lily Cr'y.....	Ind..	C. H. Bell & Co.....	Andrew.....	Maquoketa	C. Reichling..	S. & G. C.	Test..	
434	Bellevue.....	Rose Valley Cr'y.....	Stk Co	W. J. Manning, Mgr	Bellevue.....	Bellevue.....	W. J. Manning.	G. C.		
435	Emeline.....	Brandon Co-op. Cr'y.....	Co-op.	Jno. Wagoner, Sec.	Emeline.....	Maquoketa	Nels H. Lorenz.	Sep'tr..	Test..	
436	Fulton.....	Fulton Co op. Cr'y Co.	Co-op.	J. Ballinger, Pres.	Fulton.....	Maquoketa	E. R. Dunham	Sep'tr..	Test..	756
437	La Motte.....	La Motte Creamery.....	Ind..	Nemmers & Butler.	La Motte.....	La Motte.....	Peter Butler.	S. & G. C.	Test..	265
438	*Bancroft, Ia	La Motte Creamery.....	Ind..	Nemmers & Butler.	La Motte.....	Skim station.		S. & G. C.	Test..	
439	*St. Donatus.....	La Motte Creamery.....	Ind..	Nemmers & Butler.	La Motte.....	Skim station.		S. & G. C.	Test..	
440	La Motte.....	Sterling Sep'tr Cr'y.....	Ind..	Hoffman & Keitler.	La Motte.....	La Motte.....	M. J. Hoffman.	S. & G. C.	Test..	71
441	Miles.....	Pioneer Creamery.....	Stk Co	O. W. Heynen, Mgr.	Miles.....	Miles.....	George Sizer.	S. & G. C.	Test..	99
442	Monmouth.....	Monmouth Co-op Cy Co	Co-op.	George Sokol, Sec.	Monmouth.....	Monmouth.....	O. H. Mowers.	Sep'tr..	Test..	131
443	Preston.....	Preston Creamery.....	Ind..	John Newman & Co.	Elgin, Ill.	Preston.....		Sep'tr..	Test..	1
444	Spragueville.....	Spragueville Cr'y.....	Ind..	A. Von Oves.....	Miles.....	Preston.....	C. H. Peterson.	S. & G. C.	Test..	323
445	Spring Brook.....	Spring Brook Cr'y.....	Ind..	C. M. Kessler.....	Spring Brook.	Bellevue.....	Joseph Lik	G. C.		
446	Jasper County Baxter.....	Baxter Creamery.....	Ind..	Harris & Co.....	Jesp, Buchan (Ia Co)	Baxter.....	Wm. Graham	Sep'tr..	Test..	146

CREAMERY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CREAMERY.	Owned by an individual, co-operative or stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF BUTTER-MAKER.	Separator, path-sterilized cream, or both.	Method of recov- ing milk—by the hand, or by the separator.	Dairy commis- sioner's test- book number.
447	Jasper County Baxter.....	Baxter Dairy Co.....	Co-op.	H. Krump, Sec.....	Baxter..... (An Co.)	Baxter.....	Fr'k Knumboltz	Sep'tr..	Test..	745
448	Ira.....	Ira Creamery.....	Ind..	Harris & Co.....	Jesup, Buchan	Ira.....	C. Stevenson...	Sep'tr..	Test..	328
449	Kellogg.....	Farmers Co-op. D. Ass'n	Co-op.	W. C. Davis, Mgr....	Kellogg.....	Kellogg.....	G. C.	G. C.		
450	Metz.....	Gold Leaf Creamery...	Ind..	G. E. Roller.....	Metz.....	Metz.....	G. C.	G. C.		
451	Newton.....	Malaska Creamery.....	Ind..	H. D. Parsons.....	Newton.....	Newton.....	Frank J. Mable,	S.&G.C.	Test..	326
452	Newton.....	Oak Lawn Creamery...	Ind..	W. Jackson.....	Newton.....	Newton.....	Proprietor.....	Sep'tr..	Test..	157
453	Prairie City.....	Prairie City Creamery...	Ind..	Bousquet & Rhys, [Burger]	Pella, Mar. Co.	Prairie City.....	G. C.	G. C.		
454	Reasoner.....	Palo Alto Dairy Co.....	Stk Co.	W. E. Caldwell, Mgr	Reasoner.....	Reasoner.....	F. E. Bean.....	Sep'tr..	Test..	47
455	Valeria.....	Valeria Co-op. Cr'y Co.	Co-op.	J. M. Ingh, Sec.....	Valeria.....	Valeria.....	Sep'tr..	Test..		
456	Jefferson County Fairfield.....	Fairfield Creamery....	Ind..	John McLane.....	Fairfield.....	Fairfield.....	Proprietor.....	S.&G.C.	Test..	629
457	Four Corners.....	Kaufman Creamery.....	Ind..	A. M. Kaufman.....	Four Corners	Lockridge.....	E. W. Hartman,	S.&G.C.	Test..	200
458	Germanville.....	Germanville Cr'y Ass'n	Co-op.	Y. F. Cragg, Mgr....	Germanville...	Brighton.....	W. G. Clark.....	Sep'tr..	Test..	153
459	Salina.....	Salina Creamery Co.....	Co-op.	W. Ordein, Pres....	Salina.....	Beckwith.....	Henry Goevs.,	Sep'tr..	Test..	116
460	Johnson County *Morse.....	Shamrock Ch. Factory...	Ind..	I. H. Shaver Ch. Co. [Lin Co]	Cedar Rapids,	Morse.....	Fred Rader.....	G. C.		
461	North Liberty.....	North Liberty Cr'y.....	Ind..	J. W. Andele.....	North Liberty	Iowa City.....	B. McShana.....	S.&G.C.	Test..	31
462	Oasis.....	Oasis Creamery Co.....	Stk Co.	V. D. Bumgardner	Oasis.....	Oasis.....	Harry Ganoon,	Sep'tr..	Test..	298
463	Oxford.....	Oxford Creamery Co.....	Ind..	J. A. Bell.....	Oxford.....	Oxford.....	Proprietor.....	G. C.		
464	Solon.....	Cedar Co-op. Cr'y Co....	Co-op.	S. A. Williams, Sec.	Solon.....	Solon.....	Har'y Gaymand	Sep'tr..	Test..	
465	Solon.....	Solon Creamery.....	Ind..	Fisher & Beck.....	Solon.....	Solon.....	G. C.			
466	Tiffin.....	Clear Creek Cr'y Co....	Co-op.	J. Kolank, Sec.....	Tiffin.....	Tiffin.....	Joseph Kolank	G. C.		
467	Amber.....	Amber Creamery.....	Ind..	W. H. Sanford.....	Amber.....	Amber.....	Jan. Cleveland,	Sep'tr..	Test..	85
468	Amber.....	Clover Leaf Cr'y Co....	Co-op.	H. A. L. Bigley, Sec.	Langworthy...	Monticello...	John Younker...	Sep'tr..	Test..	307
469	Amber.....	Hazel Green C. Cr'y Co.	Co-op.	M. J. McNally, Sec.	Amber.....	Amber.....	Peter Peterson,	Sep'tr..	Test..	306
470	Amber.....	Jackson Creamery.....	Ind..	W. H. Sanford.....	Amber.....	Amber.....	J. W. Evans.....	Sep'tr..	Test..	81
471	Anamosa.....	Fawn Creek Creamery...	Ind..	J. S. Coodin.....	Anamosa.....	Anamosa.....	P. Wilkson.....	Sep'tr..	Test..	257
472	Anamosa.....	Franklin Creamery.....	Ind..	Vinton Smith.....	Anamosa.....	Anamosa.....	Vinton Smith,	Sep'tr..	Test..	255
473	Cass Center.....	Center Creamery.....	Ind..	J. S. Condit.....	Anamosa.....	Anamosa.....	Tobias Swanson	Sep'tr..	Test..	
474	Center Janet.....	Rose Creamery.....	Ind..	C. M. Hanna.....	Scotch Grove.	Center Janet's	Sep'tr..	Test..		
475	Hale.....	Enterprise Co-op Cr'y Co.	Co-op.	H. S. Bowman, Sec.	Hale.....	Hale.....	S. N. Conley...	Sep'tr..	Test..	125
476	Martelle.....	Martelle Creamery.....	Ind..	James Sinclair.....	Martelle.....	Martelle.....	Proprietor.....	Sep'tr..	Test..	221
477	*Martelle.....	Brookside.....	Ind..	James Sinclair.....	Martelle.....	Skim station.	Sep'tr..	Test..	222	
478	Monticello.....	Diamond Creamery.....	Ind..	Simpson, McAtire & [Co]	Boston, Mass.	Monticello.....	Sep'tr..	Test..	223	
479	Monticello.....	Downsville Co-op Cr'y Co.	Co-op.	F. B. McLaughlin, Sec	Monticello.....	Monticello.....	T. G. Parkins...	Sep'tr..	Test..	
480	Monticello.....	Star Creamery.....	Co-op.	Geo. Ambuhl.....	Howen.....	Monticello.....	G. W. Brazleton	Sep'tr..	Test..	679
481	Oilo.....	Leveson Creamery.....	Ind..	C. L. Passmore.....	Oilo.....	Oilo.....	W. J. Troy.....	Sep'tr..	Test..	711
482	Oilo.....	Oilo Creamery.....	Ind..	C. L. Passmore.....	Oilo.....	Oilo.....	W. H. Brownell,	Sep'tr..	Test..	156
483	Onslow.....	Coral Creamery.....	Ind..	J. L. Bader.....	Onslow.....	Onslow.....	Proprietor.....	Sep'tr..	Test..	97
484	*Onslow.....	Coral Creamery.....	Ind..	J. L. Bader.....	Onslow.....	Skim station.	Sep'tr..	Test..		
485	Scotch Grove.....	Ross Creamery.....	Ind..	C. M. Hanna.....	Scotch Grove.	Scotch Grove.	Proprietor.....	Sep'tr..	Test..	696
486	Temple Hill.....	Temple Hill Co-op Cr'y Co.	Co-op.	M. E. Carr, Pres....	Temple Hill...	Cascade.....	C. R. Fishmeier	Sep'tr..	Test..	707
487	Wyoming.....	Wyoming Co-op Cr'y Ass'n	Co-op.	J. W. Rhodes, Sec....	Wyoming.....	Wyoming.....	L. H. Smith.....	Sep'tr..	Test..	

CREAMERY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CREAMERY.	Organized by an individual, cooperative, or stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF BUTTER-MARKET.	Specialties, such as cream, or both.	Method of receiving the milk—by the cans or by the troughs.	Butter—Stanol's or test-bottle number.	
485	<i>Keokuk County.</i> Delta.....	Delta Creamery.....	Ind...	James Dickson.....	Delta.....	Delta.....	Harry S. Wood.....	Sep'tr..	Hd.		24
486	Hedrick.....	Hedrick Creamery Co..	Co-op.	J. M. Brady, Sec.....	Hedrick.....	Hedrick.....	R. B. Sensey.....	Sep'tr..	Test..		616
490	Keota.....	Keota Creamery Co.....	Stk Co	S. E. Reisman, Mgr.....	Keota.....	Keota.....	W. W. Carpenter.....	Sep'tr..	Test..		106
491	Keswick.....	Keswick Creamery.....	Ind..	Wilson & Robinson.....	Keswick.....	Keswick.....	W. B. Robinson.....	G. C.			
492	Richland.....	Richland Creamery.....	Ind..	J. D. Eicher.....	Richland.....	Richland.....	J. D. Eicher.....	G. C.			
493	What Cheer.....	What Cheer Creamery.....	Ind..	F. S. Emery.....	What Cheer.....	What Cheer.....	Proprietor.....	G. C.			
494	<i>Kosuth County.</i> Algona.....	Algona Co-op Cr'y Co..	Co-op.	M. Schenk, Sec.....	Algona.....	Algona.....	J. Hanna.....	Sep'tr..	Test..		236
495	Bancroft.....	Bancroft Co-op Cr'y Co.	Co-op.	— Brauer, Pres.....	Bancroft.....	Bancroft.....		Sep'tr..	Test..		
496	Bancroft.....	Seneca Co-op Cr'y Co..	Co-op.	M. Jensen, Sec.....	Seneca.....	Bancroft.....	Louis Tibbetts.....	Sep'tr..	Hd.		
497	Buffalo Fork.....	Buffalo Fk Co-op Cr'y Co.	Co-op.	E. B. Eldy, Sec.....	Buffalo Fork.....	Burt.....		Sep'tr..	Test..		632
498	Burt.....	Burt Co-op Cr'y Co.....	Co-op.	Geo. A. Angus, Sec.....	Burt.....	Burt.....	D. L. Driver.....	Sep'tr..	Test..		697
499	Burt.....	Fenton Co-op Cr'y Co..	Co-op.	J. M. Moore, Sec.....	Fenton.....	Burt.....	H. W. Pettibone.....	Sep'tr..	Test..		348
500	Burt.....	Lake View Creamery.....	Ind..	R. Lane.....	Burt.....	Burt.....	Proprietor.....	Sep'tr..	Test..		
501	Burt.....	Lone Rock Creamery.....	Co-op.	J. Bernard, Sec.....	Burt.....	Burt.....	Proprietor.....	Sep'tr..	Test..		123
502	Germania.....	Germania Creamery.....	Ind..	S. K. Swenson.....	175 W. Green st Chicago, Ill.	Germania.....	Joao Ulrich.....	Sep'tr..	Test..		
503	German Valley.....	German Valley.....	Ind..	Oleson Bros.....	Wesley.....	Wesley.....	Frank O. Bacon.....	S. & G C	Test..		
504	Hobart.....	Hobart Co-op Cr'y.....	Co-op.	A. Gilmore, Sec.....	Hobart.....	Hobart.....	August Nurell.....	Sep'tr..	Test..		300
505	Irvington.....	Irvington Co-op Cr'y Co.	Co-op.	Jos. Dunwoode, Sec.....	Irvington.....	Irvington.....	M. P. Bordwell.....	Sep'tr..	Test..		289
506	Lott's Creek.....	Lott's Crk Co-op Cr'y Co.	Co-op.	F. L. Ramey, Sec.....	Lott's Creek.....	Whittemore.....	Fred Holman.....	Sep'tr..	Test..		241
507	Swea City.....	Swea City Co-op Cr'y Co.	Co-op.	Jno. E. Peterson, Sec.....	Swea City.....	Swea City.....	J. A. Cronholm.....	Sep'tr..	Test..		230
508	Wesley.....	Wesley Creamery.....	Ind..	Oleson Bros.....	Wesley.....	Wesley.....	Fred Booser.....	Sep'tr..	Test..		302
509	West Bend.....	Garfield Creamery Co..	Co-op.	Rudolph Berning.....	West Bend.....	West Bend.....	J. L. Reid.....	Sep'tr..	Test..		168
510	Whittemore.....	Whittemore Cr'y Co.....	Co-op.	Thos. Cormody, Sec.....	Whittemore.....	Whittemore.....	F. E. Fairman.....	Sep'tr..	Test..		197
511	<i>Lee County.</i> Sawyer.....	Sawyer Creamery.....	Ind..	J. F. Wray.....	Sawyer.....	Sawyer.....	H. S. Latham.....	Sep'tr..	Hd.		
512	<i>Lin County.</i> Alburnette.....	Eureka Creamery Co..	Stock.	J. M. Robins, Sec.....	Robins (Delaware Co.) Hazel Green.....	Alburnette.....	R. E. Gould.....	Sep'tr..	Test..		627
513	Broadway.....	Broadway Creamery.....	Ind..	F. R. Dickey.....	Broadway.....	Ryan.....		Sep'tr..	Test..		
514	Center Point.....	Center Point Creamery.....	Ind..	G. L. Weeks.....	Center Point.....	Center Point.....		Sep'tr..	Test..		
515	Central City.....	Central City Creamery.....	Ind..	Henderson & Nietert.....	Central City.....	Central City.....	John Nietert.....	Sep'tr..	Test..		53
516	Central City.....	Valley Farm Creamery.....	Ind..	P. G. Henderson.....	Central City.....	Central City.....	St. Elmo Wright.....	Sep'tr..	Test..		4
517	Coggon.....	Coggon Creamery.....	Stock.	M. L. Ware, Sec.....	Coggon.....	Coggon.....	W. F. Reid.....	Sep'tr..	Hd.		
518	Coggon.....	Deep Spring Creamery.....	Ind..	Henderson & Bowser.....	Coggon.....	Coggon.....	J. B. Bowser.....	Sep'tr..	Test..		
519	Coggon.....	Nickel Plate Co-op Cr'y Co.	Co-op.	Jerry Maloney, Pres.....	Broadway.....	Coggon.....	James Church.....	Sep'tr..	Test..		351
520	Coggon.....	North-Side Creamery.....	Co-op.	C. J. Johnson, Sec.....	Coggon.....	Coggon.....	Fred Lehman.....	Sep'tr..	Hd.		684
521	Elmont.....	Elmont Creamery.....	Ind..	S. B. Mills.....	Elmont.....	Central City.....	Proprietor.....	Sep'tr..	Hd.		
522	Ely.....	Ely and Western Cr'y.....	Co-op.	J. C. Dvorak, Sec.....	Ely.....	Ely.....	G. B. Gray.....	Sep'tr..	Test..		364
523	<i>(Iowa.)</i> Western Col.....	Ely and Western Cr'y.....	Co-op.	J. C. Dvorak, Sec.....	Ely.....	Skim station.....		Sep'tr..	Test..		
524	Fairfax.....	Scotch Grove Creamery.....	Ind..	Henderson & Babcock.....	Fairfax.....	Cedar Rapids.....	A. Y. Babcock.....	Sep'tr..	Hd.		
525	Lafayette.....	Lafayette Cr'mery Co..	Co-op.	D. W. Neighbor, Sec.....	Lafayette.....	Alburnette.....	H. S. Loveland.....	Sep'tr..	G. C.		
526	Lisbon.....	W. S. Furnas Cr'y Co..	Stock.	W. S. Furnas, Sec.....	Lisbon.....	Lisbon.....	Cledi Hoover.....	Sep'tr..	Test..		
527	Marion.....	Marion Creamery.....	Ind..	W. W. Gray Cr'y Co.....	Marion.....	Marion.....	C. A. Cline.....	Sep'tr..	Test..		134
528	Bertram.....	Marion Creamery.....	Ind..	W. W. Gray Cr'y Co.....	Marion.....	Skim station.....		Sep'tr..	Test..		

CREAMERY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CREAMERY.	Operated by an individual, co-operative, or stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	F. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF BUTTER-MAKER.	Separator, unskimmed cream, or both.	Method of receiving milk—by the hundred, by the hundred, by the hundred.	Dairy commissioner's test-note number.
529	Linn County, Prairieburg	Oak Leaf Creamery	Ind.	Mihlert & Cook	Coggon	Coggon		Sep'tr	Hd	91
530	Robbs	Eureka Creamery Co.	Stock	J. M. Robbs, Sec.	Robbs	Robbs	R. E. Gould	Sep'tr	Test.	
531	Springville	Phoenix Creamery	Ind.	Irwin Paul	Springville	Springville	Proprietor	Sep'tr	Test.	281
532	*Springville	Phoenix Creamery	Ind.	Irwin Paul	Springville	Springville	Proprietor	Sep'tr	Test.	
533	*Springville	Springville Factory	Ind.	Edward C. Clark	Cedar Rapids	Walker	G. Lissner	Sep'tr	Test.	
534	Toddville	Monroe Creamery	Stock	J. Johnson, Sec.	Toddville	Toddville		Sep'tr	Test.	218
535	Troy Mills	Troy Mills Creamery	Ind.	Bruce & Harvey	Troy Mills	Walker	T. H. Nietert	Sep'tr	Hd.	
536	Troy Mills	Highland Creamery	Stock	W. R. Sherry, Sec.	Troy Mills	Walker	J. W. Laird	Sep'tr	Test	15
537	Walker	Walker Creamery	Ind.	H. J. Nietert	Walker	Walker	Irvin Minehart	Sep'tr	Hd.	
538	Waubek	Burlingham Cr'y Co.	Co-op	W. W. Ross, Sec.	Waubek	Springville	H. C. Hemenway	Sep'tr	Hd.	
539	Waubek	Crown Creamery	Ind.	J. G. Fox	Waubek	Waubek	Proprietor	Sep'tr	Hd.	
540	Waubek	Waubek Creamery	Ind.	A. L. Cory	Waubek	Viola	Proprietor	Sep'tr	Hd.	
541	Fredonia	Fredonia Co-op. Cr'y Co.	Co-op	Lebernecht, Pres	Fredonia	Fredonia	E. W. Kelley	G. C.		
542	Letts	Letts Creamery	Ind.	H. H. Hilderbrand & (Son)	Letts	Letts	J. M. Hilderbrand	G. C.		
543	Wapello	Wapello Creamery	Ind.	C. P. Brethoung	Wapello	Wapello		G. C.		
544	Linn County, Russell	Russell Creamery Co.	Stock	W. J. Marshall, Sec.	Russell	Russell	W. J. Marshall	Sep'tr	Test.	84

CREAMERY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CREAMERY.	Organized by an individual, or partnership, or stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF BUTTER-MAKER.	Separator, gath-ered cream, or both.	Method of receiv- ing milk—by separator or by the hand.	Dairy commis- sioner's test- number.
368	Mitchell Coun-ty	Lawn Spring Cr'y Co.	Co-op.	T. J. Wheeler, Pres.	Bailey	Bailey	M. M. Blandin.	G. C.		
369	McIntire	Ice Cave Creamery Co.	Stk Co.	O. E. Elvidge, Sec.	Bailey (Deshick OR Decorah, Win.	McIntire	Knut Hoage.	Sept'y	Test.	
370	Merna	Rock Creek Co-op Cr'y	Co-op.	S. J. Fosholt, Sec.	Merna	Osage	A. G. Rohr	G. C.		736
371	New Haven	Farmers' Co-op Cr'y	Co-op.	M. Hunt, Sec.	New Haven	Osage	Thos. Trim	G. C.		
372	Orchard	Spring Creek Cr'y	Co-op.	J. W. Naden, Sec.	Orchard	Orchard	N. B. Fairbrother	G. C.		
373	Osage	Osage Co-op Cr'y Co.	Co-op.	A. Bartle, Sec.	Osage	Osage	D. McDougal	G. C.		
374	Riceville	Riceville Co-op Cr'y	Co-op.	F. J. Carpenter, Sec.	Riceville	Riceville	Geo. Miller	G. C.		
375	St. Ansgar	Farmers' Co-op. Cr'y.	Co-op.	J. F. Dermody, Sec.	St. Ansgar	St. Ansgar	I. A. Gonkins	G. C.		
376	Stacyville	Stacyville Creamery	Ind.	J. M. Westlake	Stacyville	Wheeler	C. B. French	Sept'r	Hd.	
377	Wheeler	Little Cedar	Co-op.	W. B. Danforth, Sec.	Little Cedar	Wheeler	C. W. Thomas	G. C.		
378	Monona Coun-ty	Walnut Grove Cream'y	Ind.	W. H. Poake	Blencoe	Blencoe	Peter Beck	Sept'r		
379	Montgomery County	Elliott But. & Ch. Co.	Co-op.	H. G. Barnes, Sec.	Elliott	Elliott	J. H. Baldwin	Sept'r	Test.	119
380	Stanton	Stanton Creamery	Ind.	J. W. Atwood & Bro.	Stanton	Stanton	R. H. Treyrou	Sept'r	Hd.	
381	Montrose County	Penn Ave. Creamery	Ind.	Jacob Long	Atalissa	Atalissa	Proprietor	G. C.		607
382	West Liberty (Cedar Co.)	Cedar Valley	Ind.	S. B. Pickering	West Liberty	West Liberty	J. P. Starr	S. & G. C.	Hd.	
383	Centerville	Cedar Valley	Ind.	S. B. Pickering	West Liberty	Skim station		S. & G. C.	Hd.	
384	West Liberty	Lone Star Creamery	Ind.	H. H. Hilderbrand	West Liberty	West Liberty	E. B. Hildebrand	G. C.		
385	Wilton Junct'n	Nickle Plate	Ind.	Geo. W. Kelley	Wilton Junct'n	Wilton Junct'n	C. E. Kelley	S. & G. C.	Hd.	
386	*Moscow	Nickle Plate	Ind.	Geo. W. Kelley	Wilton Junct'n	Skim station		S. & G. C.	Hd.	
387	O'Brien Coun-ty	Calumet	Ind.	Adams Bros.	Sutherland	Sutherland		Sept'r	Test.	
388	Paulina	Caledonia	Stk. Co.	Wm. Gehels, Sec.	Germanstown	Paulina	Wm. Gehels	Sept'r	Hd.	29
389	Hartley	Hartley Creamery	Ind.	M. Baskins	Hartley	Hartley		S. & G. C.		
390	Sanborn	Sanborn	Ind.	Geo. Wells	Sanborn	Sanborn	Geo. Wells	S. & G. C.	Test.	32
391	Sutherland	Sutherland	Ind.	Adams Bros.	Sutherland	Sutherland	L. H. Flockner	Sept'r	Test.	67
392	Oceyoda Coun-ty	[Factory Farmers' Co-op. B. & C.	Ind.	F. J. Pousck	Oceyodan	Oceyodan	H. E. Richardson	S. & G. C.	Test.	
393	Sibley	Sibley Creamery	Ind.		Sibley	Sibley		Sept'r	Test.	88
394	Page County	Blanchard	Stk. Co.	Ed Kennon, Sec.	Blanchard	Blanchard	J. J. Thompson	Sept'r	Hd.	
395	Clarinda	Clarinda	Ind.	Chiles Bros.	Clarinda	Clarinda	J. K. Breese	G. C.		
396	Shambaugh	Shambaugh Creamery	Stk. Co.	L. W. Shambaugh, Pr.	Shambaugh	Shambaugh	R. A. Hartborne	Sept'r	Hd.	
397	Osceola Coun-ty	Silver Lake Cr'y Co.	Co-op.	Charles Duhigg, Sec.	Ayrshire	Ayrshire	W. J. Dilger	Sept'r	Test.	263
398	Crippen	Crippen Creamery Co.	Co-op.	M. Jofat, Sec.	Crippen	Crippen		Sept'r	Test.	232
399	Curlew	Curlew Creamery	Co-op.	G. W. Downs, Sec.	Curlew	Curlew	Nic Kautson	Sept'r	Test.	155
400	Cylinder	Cylinder B. & C. Ass'n.	Co-op.	B. Towle, Sec.	Cylinder	Cylinder	E. W. Reid	Sept'r	Test.	253
401	Dewey	Maple Leaf Cr'y Co.	Stock.	A. Leishman, Sec.	Dupew	Emmetsburg		Sept'r	Test.	519
402	Emmetsburg	Nevada Creamery Co.	Co-op.		Emmetsburg	Emmetsburg		Sept'r	Test.	
403	Fairville	Fairville Creamery	Co-op.	C. H. Blockwenn, Sec. (R. Co.)	Fairville	Whittemore	Albert Krosna	Sept'r	Test.	369
404	Graettinger	Graettinger Creamery	Ind.	Pres. F. H. Christensen (Sec.)	Graettinger	Graettinger		Sept'r	Test.	652
405	Graettinger	Lost Island Cr'y Co.	Co-op.	Lars C. Christensen	Graettinger	Graettinger	M. C. Peterson	Sept'r	Test.	673
406	Mallard	Mallard B. & C. Ass'n.	Co-op.	Theo. Reinder, Sec.	Mallard	Mallard	J. W. Finnell	Sept'r	Test.	340

CREAMERY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CREAMERY.	(Incorporated by an individual or partnership or stock company)	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF BUTTER-MANAGER.	Separator, Galt, or other cream, or both.	Method of receiving the milk, or by the herd.	Dairy code number.
807	Palo Alto County	Osgood Creamery Co.	Co-op.	L. P. Stillman	Osgood	Osgood	C. W. Cook	Sep'te.	Test.	37
808	Bohman	Bohman Co-op. D'y Co.	Co-op.	C. J. Fry, Sec.	Bohman	Bohman	Geo. Minkler	Sep'te.	Test.	76
809	Rothven	Highland Butter Ass'n	Co-op.	T. J. Brennan, Sec.	Rothven	Rothven	W. H. Baker	Sep'te.	Test.	223
810	Rothven	Rothven Creamery	Ind.	H. D. Remington	Rothven	Rothven	E. J. Remington	Sep'te.	Test.	742
811	Rothven	Trembald Lake	Ind.	H. D. Remington	Rothven	Rothven	A. L. Remington	Sep'te.	Test.	303
812	West Bend	West Bend Co-op. D'y Co.	Co-op.	L. A. Temple, Sec.	West Bend	West Bend	Thomas Clark	Sep'te.	Test.	733
813	Phonoth County	Le Mars Co-op. D'y Co.	Co-op.	Thos. Langel, Sec.	Le Mars	Le Mars	J. C. Burbridge	Sep'te.	Test.	658
814	Le Mars	Merrill Creamery Co.	Stock.	R. M. Crouch, Sec.	Merrill	Merrill	G. B. Horrocks	Sep'te.	Test.	
815	Renssen	Renssen Co-op. D'y Co.	Co-op.	Geo. W. Hofner, Sec.	Renssen	Renssen	M. Freese	Sep'te.	Id.	
816	Struble	Struble Creamery Co.	Stock.	Geo. W. Hofner, Sec.	Struble	Struble		Sep'te.	Id.	
817	Phonoth County	Rosenthal Creamery	Ind.		Fonda	Fonda		Sep'te.	Test.	311
818	Laurens	Laurens Creamery	Ind.	T. J. Beck & Co.	Laurens	Laurens	Proprietor	G. C.	Test.	
819	Plover	Plover Creamery	Ind.	John Carroll	Laurens, D.	Plover	F. W. Shellman	Sep'te.	Test.	
820	Polk County	Glitt Edge	Ind.	W. R. Rogers	Rolfo	Rolfo	E. D. Rogers	Sep'te.	Test.	239
821	Altoona	Altoona Creamery Co.	Ind.	Des Moines Dairy Co.	Des Moines	Altoona		Sep'te.	Id.	
822	Bondurant	Prim's Co-op. D'y Ass'n	Co-op.	B. F. Rothrock, Sec.	Bondurant	Bondurant	F. J. Scollon	Sep'te.	Test.	

823	Grimes	Grimes B. & C. Co.	Stock.	W. J. Stewart	Grimes, Co.	Grimes	C. E. Black	Sep'te.	Test.	
824	Maxwell	Kopston	Ind.	Frank W. Hill	Maxwell, Co.	Maxwell	A. K. Mendon	S. & G. C.	Test.	
825	Mitchellville	Mitchellville D'y Ass'n	Co-op.	J. E. Miller, Sec.	Mitchellville	Mitchellville	J. H. Edmondson	Sep'te.	Id.	
826	Polk City	The Top Butter Co.	Stock.	L. G. Wink, Sec.	Polk City	Polk City	J. L. Wilson	Sep'te.	Test.	
827	Runnells	Runnells Creamery	Stock.	L. G. Wink, Sec.	Runnells	Runnells	H. L. Case	Sep'te.	Id.	277
828	Phonoth County	Avena Creamery	Ind.	H. Frost	Avena	Avena	M. A. Sorenson	G. C.	Id.	281
829	Hancock	Silver Valley	Ind.	H. C. Brundin	Hancock	Hancock	Fred. Johnson	Sep'te.	Test.	
830	Macdonald	Macdonald D'y Ass'n	Stk Co.	C. H. McCready, Sec.	Macdonald	Macdonald	N. M. Geyer	Sep'te.	Test.	
831	Minden	Minden Creamery	Ind.	S. T. Joergensen	Minden	Minden	Proprietor	S. & G. C.	Test.	608
832	Brooklyn County	Brooklyn Creamery	Ind.	Halter & Baird	Brooklyn	Brooklyn	M. Nielsen	G. C.	Test.	
833	Deep River	Deep River	Ind.	Halter & Baird	Deep River	Deep River	E. A. Smith	G. C.	Test.	197
834	Grinnell	Fourie Creamery	Ind.	J. W. Fowler	Grinnell	Grinnell	Proprietor	Sep'te.	Test.	191
835	Grinnell	Grinnell Creamery	Ind.	Yence & Matterson	Grinnell	Grinnell	Proprietor	S. & G. C.	Test.	
836	Guernsey	Guernsey Creamery	Ind.	Negley & Hamant	Guernsey	Guernsey	Wm. Woodcock	G. C.	Test.	
837	Guernsey	Beam Farm Creamery	Ind.	J. W. Kase	Guernsey	Guernsey	Proprietor	G. C.	Test.	
838	Guernsey	Hartwick Creamery Co.	Ind.	J. Haheman, Sec.	Hartwick	Hartwick	J. W. Benner	G. C.	Test.	
839	Ringgold County	Ringgold Creamery	Co-op.	F. M. Tobey	Ringgold	Ringgold	M. S. Tobey	Sep'te.	Test.	
840	Knott	Knott Creamery	Ind.	F. M. Tobey	Knott	Knott	D. M. Rich	G. C.	Test.	
841	Sec. County	Auburn Creamery	Ind.	D. M. Rich, Sec.	Boeding	Boeding	S. G. McCoy	Sep'te.	Id.	121
842	Carnarvon	Carnarvon Creamery	Ind.	Boivin & Bros. & Co.	County	Auburn	Geo. Wanders	Sep'te.	Id.	122
843	Carnarvon	Carnarvon Butter Co.	Co-op.	Boivin & Bros. & Co.	Nevada, Story	Carnarvon	T. J. Boone	Sep'te.	Id.	
844	Early	Delaware Order Co.	Co-op.	Souman & Hoon	Carnarvon	Carnarvon	A. J. Groblaud	Sep'te.	Test.	13
845	Early	Early Creamery	Ind.	Clark S. Spear, Sec.	Early	Early	Proprietor	Sep'te.	Test.	257
				George W. Patton	Early	Early		Sep'te.	Test.	

CREAMERY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CREAMERY.	Owned by an individual, co-operative stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF BUTTER-MAKER.	Separator, authorized cream, or both.	Method of receiving milk for the time being by the hundred.	Dairy commission number or bottle number.
646	Sac County, Early.....	Gold Medal.....	Ind.	J. W. Wright.....	Early.....	Early.....	Proprietor.....	Sep'tr.	Test.	191
647	Lake View.....	Lake View.....	Ind.	Donahue & Abern.....	Lake View.....	Lake View.....	John Donahue.....	Sep'tr.	Test.	249
648	Odebolt.....	Odebolt Creamery.....	Ind.	R. Crichton.....	Odebolt.....	Odebolt.....	Proprietor.....	Sep'tr.	Test.	683
649	Odebolt.....	Rose Valley.....	Ind.	G. Fahlendorf.....	Odebolt.....	Odebolt.....	M. S. Trautman.....	Sep'tr.	Test.	303
650	*Sac City.....	Blue Grass B. & Ch. Fly.....	Ind.	L. Hillman.....	Sac City.....	Sac City.....	Proprietor.....	Sep'tr.	Test.	
651	Sac City.....	Coon Valley Creamery.....	Ind.	Elwood & Pettis.....	Sac City.....	Sac City.....	Proprietor.....	Sep'tr.	Test.	
652	Sac City.....	Pearl Creamery.....	Ind.	C. G. Early.....	Sac City.....	Sac City.....	W. H. Pettis.....	Sep'tr.	Test.	
653	Schaller.....	Eureka.....	Ind.	C. F. Schroeder.....	Schaller.....	Schaller.....	Proprietor.....	Sep'tr.	Test.	31
654	Wall Lake.....	Wall Lake Creamery.....	Ind.	Donahue & Abern.....	Wall Lake.....	Wall Lake.....	T. Deacon.....	Sep'tr.	Test.	711
655	Scott County, Big Rock.....	Cedar Creamery.....	Ind.	H. L. Dean.....	[Co. Tipton, Cedar]	Big Rock.....	G. C.			
656	Dixon.....	Dixon Creamery Co.....	Ind.	Hener & Kaver.....	Dixon.....	Dixon.....	G. C.			
657	Donahue.....	Donahue Fm's But. Co.	Co-op.	F. Keppey, Sec.....	Donahue.....	Donahue.....	G. C.			
658	Eldridge.....	Eldridge But. & Ch. Pac.	Co-op.	W. J. Bryson.....	Eldridge.....	Eldridge.....	Proprietor.....	Sep'tr.	Test.	
659	Long Grove.....	Star Creamery.....	Ind.	G. W. Curtis.....	Long Grove.....	Long Grove.....	W. J. Bryson.....	Sep'tr.	Test.	276
660	Shelby County Elkhorn.....	Danish Sep'tr. Cry.....	Stk Co.	George James, Sec.....	Elkhorn.....	Brayton.....	G. C.			
661	Harlan.....	Buck Valley Creamery.....	Co-op.	R. Rawwassen, Sec.....	Harlan.....	Harlan.....	M. P. Henrickson.....	Sep'tr.	Test.	
662	Harlan.....	Harlan Cr'y Ass'n.....	Stk Co.	O. F. Graves, Sec.....	Harlan.....	Harlan.....	G. C.			191

663	Harlan.....	Prairie Rose.....	Co-op.	J. D. Lorenzen, Pres.	Harlan.....	Walnut.....	C. S. Christensen.....	Sep'tr.	Test.	
664	Sioux County Alton.....	Alton Creamery.....	Co-op.	J. P. Fritz, Sec.....	Alton.....	Alton.....	Hy Ter Haar.....	Sep'tr.	Hd.	704
665	Granville.....	Northwestern Cr'y Co.	Stk Co.	John Elberg, Mgr.	Granville.....	Granville.....	Fred Kopper.....	Sep'tr.	Hd.	
666	Hawarden.....	Hawarden Cr'y Ass'n.....	Co-op.	J. M. Lynn, Sec.	Hawarden.....	Hawarden.....	G. A. Crowther.....	Sep'tr.	Test.	139
667	Hull.....	Hull Creamery.....	Ind.	L. E. Bourquin.....	Hull.....	Hull.....	L. E. Bourquin.....	Sep'tr.	Hd.	324
668	Rock Valley.....	Rock Valley.....	Ind.	John Cronin.....	Rock Valley.....	Rock Valley.....	Proprietor.....	Sep'tr.	Hd.	737
669	Sioux Center.....	Sioux Center Cr'y Co.	Co-op.	Ben Mower, Pres.	Sioux Center.....	Sioux Center.....	Gus Kraumpel.....	Sep'tr.	Test.	
670	Sioux Center.....	Welcome Cr'y Co.....	Stk Co.	H. S. Braithwait, Sec.	Sioux Center.....	Sioux Center.....	W. M. Edzer.....	Sep'tr.	Hd.	749
671	Story County Ames.....	Iowa Agricul. Col. Cr'y		State of Iowa.....	Ames.....	Ames.....	G. L. McKay.....	Sep'tr.	Test.	304
672	Cambridge.....	Spring Valley.....	Ind.	B. H. Erb.....	Cambridge.....	Cambridge.....	H. J. Talbert.....	Sep'tr.	Test.	308
673	Collins.....	Fm's Co-op Cr'y Ass'n.	Co-op.	A. G. Armstrong, Sec.	Collins.....	Collins.....	J. N. Bussant.....	Sep'tr.	Test.	629
674	Colo.....	Fatview.....	Ind.	N. W. Gales.....	Colo.....	Colo.....	Proprietor.....	Sep'tr.	Test.	614
675	Gilbert Station.....	Gilbert Station Cr'y.....	Ind.	Thomas B. Jones.....	Gilbert Station.....	Gilbert Station.....	L. Smith.....	Sep'tr.	Test.	40
676	Iowa Center.....	Iowa Center.....	Ind.	J. Q. Moore.....	Iowa Center.....	Marxwell.....	M. Mortensen.....	S & G C.	Test.	412
677	McCallsburg.....	McCallsburg B. & C. As.	Co-op.	F. Schawper, Pres.	McCallsburg.....	McCallsburg.....	G. F. Snyder.....	Sep'tr.	Test.	240
678	Maxwell.....	Maxwell.....	Ind.	Frank W. Hill.....	Maxwell.....	Maxwell.....	W. Peterson.....	S & G C.	Test.	253
679	Nevada.....	Millford Creamery Co.	Stk Co.	H. B. Minkler, Sec.	Nevada.....	Nevada.....	F. H. Gray.....	Sep'tr.	Test.	306
680	Roland.....	Indian Hill.....	Stk Co.	R. Kimble, Pres.	Roland.....	Roland.....	A. Snyder.....	Sep'tr.	Test.	681
681	Roland.....	Roland Creamery.....	Ind.	Boardman Bros. & Co.	Nevada.....	Roland.....	N. C. Johnson.....	Sep'tr.	Test.	125
682	Roland.....	Roland Fm's Cr'y Co.	Co-op.	E. J. Evenson, Sec.	Roland.....	Roland.....	J. F. Bretts.....	Sep'tr.	Test.	43
683	Slater.....	Slater B. & Cr'y Ass'n.	Co-op.	J. W. Peterson, Sec.	Slater.....	Slater.....	H. C. Granzett.....	Sep'tr.	Test.	38
684	Story City.....	Story City Fm. Co-op'y	Co-op.	L. B. Larson.....	Story City.....	Story City.....	W. H. Schelber.....	Sep'tr.	Test.	730
685	Zearing.....	Zearing Creamery.....	Ind.	E. S. Hoyt.....	Zearing.....	Zearing.....	Proprietor.....	Sep'tr.	Hd.	

CREAMERY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CHEMERY.	Operated by an individual, co-partnership, or stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF BUTTER-MARKER.	Separator, anti-ferred cream, or both.	Method of receiving milk—by the milkmaid, by the hauler, or by the hauler.	Dairy separator's post-office number.	Volume of butter.
725	Webster County. Callender.....	Callender Creamery.....	Ind...	A. T. Lindblad.....	Callender..... Winnebago Co.	Callender..... Forest City.	Proprietor.....	Sep'tr.			
726	Clare.....	North's Farmers Cr'y Co.	Stk Co	S. E. Allen, Pres.	Clare.....	Clare.....	E. L. Allen.....	S.& G.C.	Test.		
727	Dayton.....	Dayton Creamery.....	Ind...	J. M. Daniels & Son.	Dayton.....	Dayton.....	E. L. Allen.....	Sep'tr.	Test.	28	
728	Duncombe.....	Duncombe Creamery.....	Ind...	J. J. Claussen.....	Duncombe.....	Duncombe.....	O. J. Page.....	Sep'tr.	Hd.		
729	Ft. Dodge.....	Ft. Dodge But. & Ch. As	Stk Co	J. B. Black, Sec.	Ft. Dodge.....	Ft. Dodge.....	H. H. Cummings	Sep'tr.	Test.	349	
730	Gowrie.....	Gowrie.....	Ind...	F. S. Davis.....	Gowrie.....	Gowrie.....	Geo. Holtzclaw.	G. C.			
731	Kalo.....	Payne's Model.....	Ind...	F. R. Payne.....	Kalo.....	Otho.....	Proprietor.....	Sep'tr.	Test.	105	
732	Mooreland.....	Mooreland.....	Ind...	D. J. Skinner.....	Mooreland.....	Mooreland.....	D. J. Skinner.....	Sep'tr.	Test.	132	
733	Vincent.....	Vincent Creamery Co.	Co-op.	J. M. O'Brien, Pres.	Vincent.....	Vincent.....	D. C. Miller.....	Sep'tr.	Test.	112	
734	Winnebago County. *Amund.....	Northern Iowa Cr'y Co.	Stk Co	S. E. Allen, Pres.	Forest City.....	Skin station.....		Sep'tr.	Test.		
735	Buffalo Center.....	Northern Iowa Cr'y Co.	Stk Co	S. E. Allen, Pres.	Forest City.....	Buffalo Center	O. Haskins.....	Sep'tr.	Test.		
736	Forest City.....	Northern Iowa Cr'y Co.	Stk Co	S. E. Allen, Pres.	Forest City.....	Forest City.....	John Momen.....	S.& G.C.	Test.	731	
737	Lake Mills.....	Logan Butter Factory.	Co-op.	John J. Lande, Pres.	Lake Mills.....	Lake Mills.....	J. M. Tapinger.....	Sep'tr.	Test.	309	
738	Lake Mills.....	W. & W. Creamery Ass'n	Co-op.	Ole T. Groa.....	Lake Mills.....	Lake Mills.....	F. E. Bolton.....	G. C.			
739	*Lincoln.....	N. I. Creamery Co.	Stk Co	S. E. Allen, Pres.	Forest City.....	Skin station.....	J. Woley.....	Sep'tr.	Test.	368	
740	Norman.....	Norman.....	Co-op.	S. G. Hony.....	Norman.....	Norman.....	Nels Eughret.....	S.& G.C.	Hd.	735	
741	*Bristol.....	Norman.....	Co-op.	S. G. Hony.....	Norman.....	Skin station.....		S.& G.C.	Hd.		

742	*Thompson.....	N. L. Creamery Co.....	Stk Co	S. E. Allen, Pres.	Forest City.....	Skin station.....	R. Rarson.....	Sep'tr.	Test.		
743	Winnebago County. Burr Oak.....	Silver Creek Cr'y Co.....	Co-op.	M. D. Whitney, Sec.	Burr Oak.....	Decorah.....	N. Simonsen.....	G. C.			
744	Calmar.....	Calmar Creamery.....	Ind...	Boe Bros. & Co.	Kendallville.....	Calmar.....		G. C.			
745	Castalia.....	Ice Cave Cr'y Co.....	Stk Co	O. E. Elvidge, Sec.	Decorah.....	Castalia.....	J. J. Macmannus	S.& G.C.	Test.	163	
746	Conover.....	Crystal Springs.....	Ind...	C. J. Murer.....	Decorah.....	Conover.....	L. Lyman.....	Sep'tr.	Test.	624	
747	Decorah.....	Ice Cave Cr'y Co.....	Stk Co	O. E. Elvidge, Sec.	Decorah.....	Decorah.....	Ira Hickey.....	G. C.			
748	Ft. Atkinson.....	Ice Cave Cr'y Co.....	Stk Co	O. E. Elvidge, Sec.	Decorah.....	Ft. Atkinson.....	L. H. Lee.....	S.& G.C.	Test.	170	
749	Frankville.....	Ice Cave Cr'y Co.....	Stk Co	O. E. Elvidge, Sec.	Decorah.....	Ossian.....	Ed Holmes.....	S.& G.C.	Test.		
750	Hesper.....	Anchor Creamery.....	Ind...	Henry Z. Cleveland.	Hesper.....	Mabel, Minn. (Minn.) Grove.	F. G. Cleveland	G. C.			
751	Highlandville.....	Kjomerle Spring Cr'y.	Ind...	N. S. Larson.....	Highlandville.	Spring Grove.	N. S. Larson.....	G. C.			
752	Kendallville.....	Kendallville.....	Ind...	Boe Bros. & Co.	Kendallville.....	Cresco.....	Ed Holmes.....	G. C.			
753	Nassett.....	Ice Cave Cr'y Co.....	Stk Co	O. E. Elvidge, Sec.	Decorah.....	Decorah.....	Hans Foss.....	Sep'tr.	Test.		
754	Nordness.....	Ice Cave Cr'y Co.....	Stk Co	O. E. Elvidge, Sec.	Decorah.....	Nordness.....	E. G. Oplahl.....	G. C.			
755	Nordness.....	Nordness Cr'y Co.....	Stk Co	K. Torson, Pres.	Ossian.....	Nordness.....	George Thune.....	G. C.			
756	Ossian.....	Andrews Creamery.....	Ind...	Scheidegment Bros	Ossian.....	Ossian.....	John Hickey.....	G. C.		159	
757	Ossian.....	Ice Cave Cr'y Co.....	Stk Co	O. E. Elvidge, Sec.	Decorah.....	Ossian.....	Iver Iverson.....	S.& G.C.	Test.		
758	Ossian.....	Washington Prairie.....	Ind...	Eli Opdahl.....	Decorah.....	Ossian.....	Peter Hiesje.....	G. C.			
759	Ridgeway.....	Lincoln Fr's Co-op. C.A	Co-op.	A. W. Prann, Sec.	Ridgeway.....	Ridgeway.....	Ole P. Sjobak.....	G. C.			
760	Ridgeway.....	Ice Cave Cr'y Co.....	Stk Co	O. E. Elvidge, Sec.	Decorah.....	Ridgeway.....	L. T. Fosse.....	G. C.			
761	Spillville.....	Spillville Cr'y Co.....	Stk Co	J. A. Dostal, Sec.	Spillville.....	Conover.....	J. A. Dostal.....	G. C.		315	
762	Worth County. Grafton.....	Grafton Cr'y Ass'n.....	Ind...	M. Buchner.....	Grafton.....	Grafton.....	H. H. Opperman	Sep'tr.	Test.	723	
763	Kensett.....	Farmers' Co-op. Cr'y A.	Co-op.	O. N. Kjerland, Pres	Kensett.....	Kensett.....	Peter P. Naug.....	S.& G.C.	Test.	186	
764	Kensett.....	Nordland Cr'y Ass'n.....	Co-op.	John Burgesan, Pres	Nordland.....	Kensett.....	C. H. Cleveland	Sep'tr.	Test.	733	
765	Manly.....	Manly Co-op. Cr'y.....	Co-op.	A. E. Miller, Sec.....	Manly.....	Manly.....	Henry Knowles	G. C.		242	

CREAMERY LIST BY COUNTIES—CONTINUED.

COUNTIES.	TOTAL VALUE OF CREAMERIES.		TOTAL AMOUNT PAID BUTTER-MAKERS AND ASSISTANTS.				TOTAL LBS. OF MILK RECEIVED FROM MAY 1, '94, TO MAY 1, '95.		TOTAL LBS. OF ALL BUTTER MANUFACTURED FROM MAY 1, 1894, TO MAY 1, 1895, SHOWING LBS. OF SEPARATED LBS. OF GATHERED CREAM AND LBS. WHERE BOTH ARE COMBINED.					TOTAL VALUE OF BUTTER MANUFACTURED.	TOTAL VALUE OF BUTTER SOLD OR CONSUMED FOR HOME CONSUMPTION.	ESTIMATED LOSS OR GAIN IN VALUE CAUSED BY SHORTAGE JULY, AUG., SEPT., '91.					
	No. creameries.	No. creameries paid.	Value.	No. creameries paid.	Average monthly wages paid butter makers.	Total amount paid butter-makers.	Amount paid assistants.	Total amount paid.	No. receiving milk.	No. creameries paid.	Total lbs. of milk received.	No. creameries paid.	Total lbs. of separated butter.	Total lbs. of gathered cream butter.	Total lbs. of combined cream butter.	Total lbs. of butter manufactured.	Total value.	No. creameries paid.	Total value.	No. creameries paid.	Estimated loss.
Hingold.....	2	2	3,700	2	26.00	1,703	1,615	1	1	670,118	1	39,000			39,000	7,000					
Nac.....	14	14	42,900	2	46.75	4,790	1,733	6,543	14	17,986,758	12	291,047			291,047	781,017	12	156,517	12	2,500	
Scott.....	5	5	2,970	1	59.00	600	600			670,118		27,400			27,400	27,400	1	2,120	1	1,800	
Shelby.....	4	4	6,976							670,118		32,257			32,257	6,800					
Floux.....	24	24	24,800	5	56.00	1,380	566	1,970	24	5,102,718	18	34,903			34,903	244,903	24	48,811	24	1,500	
Story.....	15	15	32,100	13	54.00	6,719	1,614	7,133	15	10,106,802	12	695,271			695,271	698,229	12	127,002	8	4,211	
Talia.....	2	2	12,000	5	41.50	1,761	860	2,185	1	670,118		353,403			353,403	324,401	5	31,064	4	2,265	
Taylor.....	2	2	2,600	6	51.00	3,143	387	3,432	2	670,118		156,431			156,431	201,611	5	54,366	3	2,917	
Union.....	11	11	11,200	2	37.50	980	239	949	8	1,084,195	8	92,641			92,641	109,641	8	30,643	8	2,392	
Wapello.....	4	4	5,500	1	73.00	866	273	1,175	1	1,700,000	1	70,013			70,013	70,013	1	15,000	4	4,800	
Washington.....	8	8	21,300	6	47.00	2,502	1,019	3,465	8	4,257,630	10	170,700			170,700	203,000	8	81,800	3	4,300	
Wayne.....	5	5	15,740	3	45.00	1,025	1,771	1,771	1	1,333,000	3	61,000			61,000	109,000	3	45,310	3	1,800	
Wells.....	10	9	23,000	5	47.00	2,215	306	3,315	9	2,821,442	1	174,443			174,443	209,443	1	40,864	1	2,900	
Winnebago.....	9	9	23,900	10	58.95	3,629	375	4,102	4	8,432,852	5	268,598			268,598	619,484	4	124,117	2	1,700	
Winnebuck.....	13	12	38,350	16	49.30	8,746	2,228	10,969	16	3,207,900	16	33,492			33,492	1,409,495	16	291,277	4	4,692	
Worth.....	8	7	16,300	8	57.10	4,680	784	5,561	7	8,627,800	7	262,226			262,226	588,022	7	107,051	2	2,500	
Wright.....	5	5	16,000	4	50.00	1,800	269	2,150	1	670,118	1	311,000			311,000	398,000	1	59,700	1	600	
Oass.....																					
Clarke.....																					
Des Moines.....																					
Leo.....	8	7	15,500	1	50.00	1,850		1,850	8	1,974,363	6	37,298			37,298	137,068	6	31,280	3	7,000	
Lucas.....																					
Monona.....																					
Van Buren.....																					
Warren.....																					
Total.....	774	661	\$ 2,046,325	323	53.10	828,529	172,099	1,000,627	647	430,330,710	549	38,107,198			11,234,044	474,752	50,019,994	549	\$ 9,408,408	123	\$ 284,147

*The information from counties having but one creamery is shown collectively in the brackets.

CHEESE FACTORY LIST.

List of cheese factories in the state, alphabetically arranged according to counties and towns, near where factory is located, together with information pertaining to each.

Office record number.	LOCATED AT OR NEAR.	NAME OF CHEESE FACTORY.	Owned by an individual or operated by a stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF CHEESE MARK.	Withholding tax paid by the factory or by the proprietor.	Days' running in 1895.	Number of bottles.
1	Adams County, Nodaway.....	S. G. Simpson.....	Ind.....	S. J. Simpson.....	Nodaway.....	Nodaway.....	Proprietor.....	Hd.		
2	Appanoose County, Iconium.....	Iconium.....	Stock.....	H. A. Thompson, Sec.	Iconium.....	Moravia and (Tyrona).....	A. Webster.....	Hd.		
3	Moravia.....	Star Cheese Co.....	Stock.....	Sam. Johnson, Sec.	Moravia.....	Moravia.....	W. M. Parry.....	Hd.		
4	Moulton.....	Moulton.....	Ind.....	A. Dickson.....	Moulton.....	Moulton.....	Proprietor.....	Hd.		
5	Ray.....	Ray Cheese Co.....	Stock.....	R. F. Main, Sec.	Ray.....	Main Station.....	H. G. Brodgar.....	Hd.		
6	Benton County, Atkins.....	Brookside.....	Ind.....	G. M. Olmsted.....	(Lin Co. Cedar Rapids, Lin Co. Cedar Rapids.)	Atkins.....	A. C. Stewart.....	Hd.		
7	Newhall.....	Model.....	Ind.....	G. M. Olmsted.....	(Lin Co. Cedar Rapids.)	Newhall.....	J. H. Huyck.....	Hd.		
8	Rogersville.....	Excelsior.....	Ind.....	B. E. Fairbanks.....	Rogersville.....	Garrison.....	Proprietor.....	Hd.		
9	Black Hawk County, Waterloo.....	Waterloo—North Star.....	Ind.....	The Fowler Co.....	Waterloo.....	Waterloo.....	Charles Wood.....	Test.		
10	Waterloo.....	Waterloo.....	Ind.....	The Fowler Co.....	Waterloo.....	Waterloo.....	F. E. Wightman.....	Test.		
11	Bremer County, Janesville.....	Janesville.....	Ind.....	The Fowler Co.....	(Hawk Co. Waterloo, Black Janesville.)	Janesville.....	A. M. Royce.....	Test.		
12	Culberson County, Rockwell City.....	Rockwell City B. & G. City.....	Stock.....	T. C. Gregg, Sec.	Rockwell City.....	Rockwell City.....	T. E. Garity.....	Test.		
13	Cedar County, Downey.....	Wapsipconoc.....	Ind.....	Croser & Gregg.....	Downey.....	Downey.....		Test.		

* Manufacture both butter and cheese.

CHEESE FACTORY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CHEESE FACTORY.	Owned by an individual, co-operative, or stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF CHEESE MAKER.	Method of receiving milk by the test, or by the test and cream.	Butterfat content, sloper's certificate number.
14	West Branch.....	West Branch—"Quaker".....	Ind.	L. H. Shaver Ch. Co.	[Linn Co. Cedar Rapids.	West Branch....	D. Van Patient.	Test.	
15 ^a	Cerro Gordo Co. Sheffield.....	Sandridge.....	Stock.	D. O'Donnell, Sec.	Rockwell.....	Rockwell.....	Charles Gerber.	Test.	
16 ^a	Clarke County, Woodburn.....	Farmers B. & C. Ass'n.....	Stock.	H. P. Halling, Sec.	Woodburn.....	Woodburn.....	H. W. Hamlinger.	Test.	216
11	Crawford County, Buck Grove.....	Thew's Cheese Factory.....	Ind.	S. M. Thew.....	Buck Grove.....	Buck Grove.....	Proprietor.....	Hd.	
18 ^a	Jackson County, Woodward.....	Woodward Creamery.....	Ind.	H. P. Colenky, Mgr.	Woodward.....	Woodward.....	Fred Colenky.....	Test.	204
19 ^a	Dayis County, Drakeville.....	Drakeville Dairy Ass'n.....	Stock.	A. Fontr, Sec.	Drakeville.....	Drakeville.....			
20	Decatur County, Garden Grove.....	Garden Grove.....	Ind.	C. D. Mallette.....	Garden Grove.....	Garden Grove.....	Proprietor.....	Hd.	147
21 ^a	Grand River.....	Grand River B. & C. Factory.....	Stock.		Grand River.....	Grand River.....		Hd.	
22 ^a	Le Roy.....	Le Roy B. & C. Factory.....	Stock.	G. M. Pence.....	Le Roy.....	Le Roy.....	D. W. Keller.....	Hd.	
23	Weldon.....	Weldon Cheese Factory.....	Ind.	Tailman & Parr.....	Weldon.....	Weldon.....	Proprietor.....	Test.	677
24 ^a	Dickinson County, Spirit Lake.....	Spirit Lake B. & C. Factory.....	Ind.	C. A. Painter.....	Spirit Lake.....	Spirit Lake.....		Hd.	
25	Floyd County, Charles City.....	Elm Spring Cheese Factory.....	Ind.	H. D. White & Co.....	Charles City.....	Charles City.....	Proprietor.....	Hd.	
26	Greene County, Grand Junction.....	Grand Junction.....	Ind.	J. C. Harker.....	Grand Junction.....	Grand Junction.....		Test.	
27	Guthrie County, Jamaica.....	Jamaica Cheese Factory.....	Ind.	A. H. Chadsey.....	Jamaica.....	Jamaica.....	Proprietor.....	Hd.	
28	Hancock County, Britt.....	Farmers B. & C. Factory.....	Stock.	Geo. Blawett, Sec.	Britt.....	Britt.....	James McGrath.	Test.	
29	Hardin County, Hubbard.....	Cottage Factory.....	Ind.	S. C. Christopher.....	Cottage.....	Hubbard.....	Charles Cesana.	Hd.	264
30	Iowa Falls.....	Ellis Cheese Manuf'g Co.....	Stock.	W. I. Clark, Mgr.	Iowa Falls.....	Iowa Falls.....		Hd.	
31	Henry County, Mount Pleasant.....	Pleasant Valley.....	Ind.	Neal Campbell.....	Mt. Pleasant.....	Mt. Pleasant.....	Proprietor.....	Hd.	
32	Howard County, Cresco.....	Cresco Cheese Co.....	Ind.	Kellow & House.....	Cresco.....	Cresco.....	Proprietor.....	Hd.	
33	Humboldt County, Renwick.....	Elmer & Co.....	Co-op.	Conrad Elmer, Mgr.	Renwick.....	Renwick.....	Fred. Fahseny.....	Hd.	
34	Renwick.....	Fred. Klasse Factory.....	Ind.	Fred. Klasse.....	Renwick.....	Renwick.....	C. Badertscher.....	Hd.	
35	Renwick.....	Guggishberg Factory.....	Ind.	G. Guggishberg.....	Renwick.....	Renwick.....	Proprietor.....	Hd.	
36	Renwick.....	Pioneer Factory.....	Ind.	Nic. Gerber.....	[Linn Co. Cedar Rapids.	Renwick.....	Proprietor.....	Hd.	
37	Renwick.....	Speick Factory.....	Ind.	Fred. Speick.....	Renwick.....	Renwick.....	Henry Jaster.....	Hd.	
38	Ida County, Arthur.....	Arthur Factory.....	Ind.	M. J. Blasser.....	Arthur.....	Arthur.....	Proprietor.....	Hd.	
39	Iowa County, Ladora.....	Ladora Factory.....	Ind.	D. D. Case.....	Ladora.....	Ladora.....	Proprietor.....	Hd.	
40 ^a	Jasper County, Valeria.....	Valeria Co-op. Cr'y Co.....	Co-op.	J. M. Ingh, Sec.	Valeria.....	Valeria.....	H. W. Patterson.	Test.	
41	Johnson County, Frank Pierce.....	Frank Pierce B. & C. Co.....	Ind.	Henry C. Karsteadt.	Frank Pierce.....	Kalona.....	Proprietor.....	Hd.	
42	Iowa City.....	Sharon Cheese Factory.....	Co-op.	F. M. Weber, Sec.	Iowa City.....	Iowa City.....	Fred. A. Edwards.	Hd.	
43	Morse.....	Shumrock Cheese Factory.....	Ind.	L. H. Shaver Ch. Co.	[Linn Co. Cedar Rapids.	Morse.....	Fred. Bader.....	Test.	200
44	Jones County, Onslow.....	Mineral Valley C. Factory.....	Ind.	John Fagan.....	Onslow.....	Onslow.....	H. E. Willard.....	Hd.	378
45	Onslow.....	Onslow Cheese Factory.....	Ind.	S. L. Gilbert.....	Onslow.....	Onslow.....	Burr Loomer.....	Hd.	68
46	Onslow.....	Onslow Valley.....	Ind.	G. B. Hall.....	Onslow.....	Onslow.....	F. E. Hall.....	Hd.	

* Manufacture both butter and cheese.

CHEESE FACTORY LIST—CONTINUED.

Office record number.	LOCATED AT OR NEAR.	NAME OF CHEESE FACTORY.	Organized by an individual or operative or stock company.	NAME OF PROPRIETOR, SECRETARY OR MANAGER.	P. O. ADDRESS OF PROPRIETOR, SECRETARY OR MANAGER.	SHIPPING STATION.	NAME OF CHEESE MAKER.	Method of packaging, as indicated by the test, or by the brand.	Number of bottles.
47	Krook County, Tallyrand	Tallyrand	Stock	L. M. Tucker, Sec.	Tallyrand	Keota	C. Tucker	Hd.	60
48	Webster	Webster Cheese Factory	Ind.	M. M. Wheeler & Sec.	Webster	Webster	H. C. Wheeler	Hd.	
49	Lee County, Ft. Madison	Denmark Factory	Ind.	T. G. Currie	Ft. Madison	Ft. Madison	Albert C. Lindsey	Hd.	
50	Linn County, Marion	Gray Factory	Ind.	Edward C. Clark	Cedar Rapids	Cedar Rapids	W. R. Carol	Hd.	
51*	Springville	Springville Cheese Factory	Ind.	Edward C. Clark	Cedar Rapids	Cedar Rapids	W. R. Carol	Test	120
52	Montgomery County, Red Oak	Lincoln	Ind.	E. T. Evans	Red Oak	Red Oak	Proprietor	Hd.	
53	Mourse County, Albia	Bluff Creek Factory	Co-op	John Forster, Sec.	Albia	Albia		Hd.	
54	Albia	Bone Factory	Ind.	S. G. Bone	Albia	Albia	Proprietor	Hd.	75
55	Albia	Diamond Cheese Co.	Stk Co	Leroy Miller, Mgr.	Albia	Albia		Hd.	
56	Albia	Enix & Smith	Ind.	Enix & Smith	Albia	Albia	Proprietors	Hd.	
57	Albia	Hilton Factory	Ind.	Samuel Hilton	Albia	Albia	Proprietor	Hd.	
58	Albia	Hollingshead & Bates	Ind.	Hollingshead & Bates	Albia	Albia	Proprietor	Hd.	
59	Albia	Manita Cheese Ass'n.	Co-op	J. M. M. Roberts, Sec.	Albia	Albia	J. A. Miller	Hd.	251
60	Eddyville	Pleasant Twp. Cheese Ass'n	Ind.	W. B. De Yar	Eddyville, Wap ^(ello Co)	Eddyville		Hd.	
61	Hilton	Enix Factory	Ind.	C. E. Enix	Hilton	Hilton	Proprietor	Hd.	
62	Hilton	Hilton Factory	Ind.	Rowles Bros.	Albia	Albia	Frank Selby	Hd.	
63	Moravia	Union Cheese Co.	Co-op	Thos. C. Crouch, Sec.	Moravia, Appa ^(lousa Co)	Moravia	John Collins	Hd.	
64	Selection	Selection	Ind.	Rowles Bros.	Albia	Albia	J. H. Rowles	Hd.	
65	Page County, Northboro	Northboro Cheese Factory	Ind.	W. H. Hatfield	Northboro	Northboro	Proprietor	Hd.	
66	Pocahontas County, Chester Center	Chester Center Ch. Factory	Ind.	E. E. Parsons	Chester Center	Grinnell	Proprietor	Test	
67	Grinnell	Neely's	Ind.	J. E. Neely	Grinnell	Grinnell	Proprietor	Test	
68	Ringgold County, Mt. Ayr	Liberty Cheese Co.	Stk Co	J. E. Main, Sec.	Mt. Ayr	Mt. Ayr	L. C. Main	Hd.	
69	Sac County, Odesholt	Wheeler Factory	Ind.	H. O. Wheeler	Odesholt	Odesholt	Phillip W. Farr		
70*	Sac City	Blue Grass B. & Ch. Factory	Ind.	I. Hullman	Sac City	Sac City	T. Gertson	Test	
71	Scott County, Round Grove	Anken Factory	Ind.	D. Anken	Davenport				
72*	Story County, Ames	Iowa Agrl. College Cr'y		state of Iowa	Ames	Ames	G. L. McKay	Test	200
73*	Van Buren County, Farmington	Farmington Creamery Co.	Ind.	Joe P. Kelley	Farmington	Farmington	Proprietor		
74	Washington County, Dublin	Dublin Cheese Factory	Stk Co	C. E. Lemley, Sec.	Dublin	West Chester	F. E. Snyder	Hd.	
75	Wayne County, Ohio	Ohio Co-operative	Co-op	M. V. B. Wright, Sec.	Ohio	Ohio		Test	
76	Corydon	Corydon Cheese Factory	Ind.	Cross & White	Corydon	Corydon	Proprietor	Hd.	81
77	Lineville	Lineville Cheese Factory	Ind.	Mathew De Haan	Lineville	Lineville	Proprietor	Hd.	
78	Promise City	Avery's Cheese Factory	Ind.	G. G. Avery	Promise City	Promise City		Hd.	
79	Winnebago County, Forest City	Holland Factory	Stk Co	S. O. Holland, Sec.	Forest City	Forest City	Fred Schuler	Hd.	
80	Wright County, Dows	Dows Factory	Ind.	A. A. Bangs	Dows	Dows	Proprietor	Hd.	
81	Dows	Jameson Cheese Factory	Ind.	G. C. Jameson	Dows	Dows	John Peuch		

* Manufacture both butter and cheese.

CHEESE FACTORY LIST BY COUNTIES.

Recapitulation of cheese factory list, together with other information pertaining to factories and factory patrons.

COUNTIES.	TOTAL NUMBER OF CHEESE FACTORIES, SHOWING NUMBER OF INDIVIDUAL, CO-OPERATIVE AND STOCK COMPANIES.		TOTAL NO. RECEIVING MILK, BY THE TEST OR BY THE HUNDRED.		NUMBER OPERATED ENTIRE YEAR AND NUMBER LESS THAN YEAR—AV. NUMBER OF MONTHS.			TOTAL NUMBER OF PERSONS EMPLOYED BY FACTORIES.		NUMBER OF PATRONS FURNISHING MILK.		NUMBER OF COWS PRODUCING MILK DELIVERED TO FACTORIES WITH AV. NUMBER OF COWS FOR EACH FACTORY.		NUMERIC/L C'S DIT'S OF DAIRY HERDS COMP'D WITH THAT OF LAST YEAR.			NUMBER OF FACTORIES BUILT AND REMODEL'D IN 1895.														
	Total number.	No. of factories reported.	Individual.	Co-operative.	Stock company.	No. of factories reported.	By test.	By the hundred pounds.	No. of factories reported.	Twelve or abn.	Six or more.	Less than six.	Av. of months.	No. of factories reported.	Cheese makers.	Assistants.	Collecting milk.	Total number of factories reported.	No. of patrons.	No. of factories reported.	No. of cows.	Average number of cows per factory.	No. of factories reported.	Larger.	Smaller.	About the same.	No. built.	No. remodeld.	Total built and remodeld.		
Adams.....	1	1																													
Appanoose.....	4	4																													
Benton.....	1	1																													
Black Hawk.....	4	4																													
Bremer.....	1	1																													
Calhoun.....	1	1																													
Cedar.....	1	1																													
Cerro Gordo.....	1	1																													
Clarke.....	1	1																													
Crawford.....	1	1																													
Dallas.....	1	1																													
Davis.....	1	1																													
Decatur.....	4	4																													
Dickinson.....	1	1																													
Floyd.....	1	1																													
Greene.....	1	1																													
Guthrie.....	1	1																													
Hancock.....	1	1																													
Hardin.....	1	1																													
Henry.....	1	1																													
Howard.....	1	1																													
Humboldt.....	1	1																													
Iowa.....	1	1																													
Jasper.....	1	1																													
Johnson.....	2	2																													
Jones.....	2	2																													
Keokuk.....	2	2																													
Lee.....	1	1																													
Linn.....	1	1																													
Montgomery.....	1	1																													
Monroe.....	1	1																													
Page.....	1	1																													
Poweshiek.....	1	1																													
Ringgold.....	1	1																													
Sac.....	1	1																													
Scott.....	1	1																													
Story.....	1	1																													
Van Buren.....	1	1																													
Washington.....	1	1																													
Wayne.....	1	1																													
Winnebago.....	1	1																													
Wright.....	1	1																													
Total.....	81	80	57	1	16	75	20	55	83	14	38	11	44	70	69	19	77	165	50	1,378	50	11,395	50	1,773	50	32	5	14	6	1	7

FINANCIAL STATEMENT.

FROM NOVEMBER 1, 1894, TO NOVEMBER 1, 1895.

Funds available November 1, 1894.....		\$ 7,817.39
Commissioner's salary.....	\$ 1,500 00	
Commissioner's contingent expenses.....	376.07	
Clerk's salary.....	600.00	
Stationery and printing.....	112.14	
Office supplies.....	45.10	
Laboratory supplies.....	102.86	
Envelopes and postage account.....	217.63	
Telegraph and telephone account.....	7.10	
Express and freight account.....	23.44	
Milk agents' fee account.....	1,142.00	
Special work, analysis and examination.....	398.66	
Balance unexpended.....	2,992.39	
Total.....	\$ 7,817.39	\$ 7,817.39

RECAPITULATION.

Funds available November 1, 1894.....		\$ 7,817.39
Total expenditures from November 1, 1894, to November 1, 1895.....	\$ 4,825.00	
Balance appropriation unexpended November 1, 1895.....	2,992.39	
Total.....	\$ 7,817.39	\$ 7,817.39
Collected for 489 milk dealers' permits issued for the year ending July 4, 1895.....		\$ 489.00
Two permits for year ending July 4, 1894.....		2.00
Turned over to state treasurer for permits issued.....	\$ 491.00	
Total.....	\$ 491.00	\$ 491.00

BUTTER SHIPMENTS.

INFORMATION FROM THE RAILWAYS.

Mention has been made under other headings in this report of numerous organizations, associations and institutions that have helped advance the great dairy interests of our state. In this connection I deem it proper to call attention to the valuable service that the railroads of our state are rendering. It should be remembered that butter is classed in a more or less degree with perishable freight, therefore extreme care in the handling of this commodity from the time it leaves the creamery until it arrives at its destination is essential. In order to accomplish this the railroads are well provided with refrigerator cars, properly iced and operated so as to take the best care possible of these valuable shipments, whether one package or a carload. At central points full trains are made up or the refrigerator cars are attached to fast trains and rushed to our eastern markets without delay, the goods arriving in as fine condition as when leaving the borders of our state, thus permitting Iowa butter to compete favorably with shipments from points nearer these markets.

Some of the railroads doing business in our larger dairy counties, to still further assure safety and guard against chance of damage by temperature in warm weather, have constructed small refrigerator rooms in freight depots for the benefit of creameries located in the country where it is necessary to haul butter from creamery to depot a long distance. This permits of the butter being handled in the early, and cooler, part of the day without injury, as it can be stored in these refrigerator rooms until time for shipment. The railroad classification for butter will justify these improvements, and they will see it to their advantage, no doubt, to construct such rooms wherever necessary.

It is through the officers of the railroads doing business in this state that we obtain our most valuable and reliable information regarding our butter shipments. These reports have been furnished promptly for the last five years to this department. Much time and work on the part of the railroads is necessary in making these reports, and they should receive our gratitude, for in no other way, without the expenditure of much time and funds, could this information be obtained.

COMPARISON OF CREAMERIES BY COUNTY

AND GROSS SHIPMENTS OF BUTTER BY RAILROADS IN IOWA, BILLED TO POINTS OUTSIDE OF THE STATE.

This table shows the total number of creameries for the year ending November 1, 1894, to be 806. For the year ending November 1, 1895, to be 774, a decrease for 1895 of 32 creameries. It also shows the gross pounds of butter billed from stations in Iowa to points outside of the state for the year ending September 30, 1894, to be 64,892,163 pounds*, deducting 16 per cent tare, leaves net pounds shipped 54,509,417 pounds. Total gross pounds of butter billed out of the state for the year ending September 30, 1895; 79,141,795; deducting 16 per cent tare, the net pounds shipped is 66,479,108, showing a healthy increase for the year ending September 30, 1895, of 11,969,691 net pounds. Further comparisons and remarks on this subject will be found on page 43 of this report.

COUNTIES.	NUMBER OF CREAMERIES FOR THE YEARS 1894-5, SHOWING INCREASE OR DECREASE BY COUNTIES.				GROSS POUNDS OF BUTTER SHIPPED OUT OF THE STATE FOR THE YEARS ENDING SEPTEMBER 30, 1894-5, SHOWING INCREASE OR DECREASE BY COUNTIES.			
	1894.	1895.	Increase.	Decrease.	1894.	1895.	Increase.	Decrease.
Adair	5	5			118,538	230,040	121,414	
Adams	1	1			211,451	269,891	58,440	
Allamakee	12	14	2		1,235,436	1,235,415		21
Appanoose	1	1			21,800			
Audubon	3	3			314,795	337,491	22,705	
Benton	1	10	9	1	403,671	610,871	207,200	
Black Hawk	22	22			1,887,610	2,034,624	147,014	
Boone	5	5			78,495	151,130	72,635	
Bremser	29	29		1	2,281,952	2,127,341		154,611
Buchanan	18	16		2	2,451,750	2,892,053	440,303	
Buena Vista	6	6			468,301	945,657	477,356	
Butler	19	17		2	1,955,160	2,359,776	394,616	
Calhoun	6	6			698,095	830,319	132,224	
Carroll	5	5			430,572	563,018	132,446	
Cass	5	1		4	242,054	320,143	78,089	
Cedar	16	10		6	900,022	957,590	57,568	
Cerro Gordo	12	12			1,481,375	1,858,948	377,573	28,652
Cherokee	4	4			231,700	372,063	140,367	
Chickasaw	17	19	2		2,491,294	3,125,343	634,049	
Clarke	1	1			95,717	108,451	12,734	
Clay	5	5	1		487,340	790,995	312,655	
Clayton	22	22			3,329,629	3,311,915		18,714
Clinton	12	10		2	262,191	750,254	488,063	
Crawford	4	6	2		80,758	344,544	263,786	
Dallas	8	9	1		449,071	601,926	152,855	
Davis	4	4			76,710	99,340	22,630	
Decatur	1	1			15,700	7,011		12,689
Delaware	31	28		3	2,809,837	2,908,041	98,204	
Des Moines	1	1			78,522	102,134	23,612	
Dickinson	1	1			184,210	139,675		44,535
Dubuque	29	27		2	2,439,745	2,306,635		133,110
Emmet	4	5	1		748,644	221,530		527,114
Fayette	22	21		1	2,484,253	2,390,435		93,818
Floyd	8	7		1	719,430	809,680	90,250	
Franklin	11	8		3	575,587	686,753	111,166	
Fremont	7	7			26,907	46,449	19,542	
Greene	8	6		2	742,302	1,164,378	422,176	
Grundy	17	17			820,697	1,160,596	339,899	
Guthrie	1	1			26,907	185,891	158,984	
Hamilton	9	8		1	920,570	1,738,037	817,467	
Hancock	5	7	2		254,335	314,328	60,003	
Hardin	11	9		2	913,443	1,373,040	459,597	
Harrison	1	1			14,622	7,540		7,082
Henry	10	3		7	95,994	83,311		12,683
Howard	1	1			91,978	1,723,328	1,631,350	
Humboldt	6	7	1		539,219	747,426	208,207	
Ia	9	3		6	874,140	120,110		754,030
Iowa	8	3		5	90,785	491,770	400,985	51,770
Jackson	13	13			427,333	1,145,228	717,895	
Jasper	9	10	1		333,523	404,840	71,317	
Jefferson	4	4			194,522	323,567	129,045	
Johnson	10	7		3	247,585	263,120	15,535	
Jones	31	21		10	3,097,024	2,654,785		442,239
Keokuk	10	6		4	239,562	269,785	30,223	
Kossuth	17	17			1,597,669	1,682,291	84,622	
Lee	1	1			732,899	713,622		19,277
Linn	33	29		4	2,101,541	2,333,867	232,326	
Louis	3	3			84,840	129,345	44,505	
Lucas	2	1		1	142,383	74,883		67,500
Lyon	1	1			154,022	272,229	118,207	
Madison	4	4			84,985	71,170		13,815
Mahaska	3	2		1	142,785	396,638	253,853	
Marion	8	6		2	220,878	41,974,685	41,753,807	
Marshall	7	6		1	660,543	738,744	72,201	
Mills	2	2			51,937	17,168		34,769
Mitchell	11	10		1	1,731,845	1,738,425	6,580	
Monona	1	1			18,945	21,491	2,546	
Monroe	3	3				625	625	

COUNTIES.	NUMBER OF CREAMERIES FOR THE YEARS 1894-5, SHOWING INCREASE OR DECREASE BY COUNTIES.				GROSS POUNDS OF BUTTER SHIPPED OUT OF THE STATE FOR THE YEARS ENDING SEPTEMBER 30, 1894-5, SHOWING INCREASE OR DECREASE BY COUNTIES.			
	1894.	1895.	Increase.	Decrease.	1894.	1895.	Increase.	Decrease.
Montgomery	4	4	0	0	230,502	228,470	107,478	
Muscataine	4	4	0	0	265,730	474,109	110,379	
O'Brien	4	4	0	0	451,434	675,737	224,303	
Ocasola	4	4	0	0	59,725	64,819	5,095	
Page	4	4	0	0	201,012	201,057		45,855
Palo Alto	15	16	1	1	1,294,770	1,075,105		219,665
Plymouth	4	4	0	0	234,056	428,500	200,444	
Pocahontas	4	4	0	0	687,570	341,909		345,661
Polk	4	4	0	0	58,840	230,050	201,210	
Pottawatomie	4	4	0	0	91,841	236,242	154,691	
Poweshiek	4	4	0	0	42,823	345,850	324,027	
Ringgold	4	4	0	0	115,509	143,930	26,651	
Sac	2	11	9	9	682,025	1,273,443	360,418	
Scott	4	4	0	0	81,960	50,624		31,336
Shelby	4	4	0	0	15,574	54,427	38,854	
Sioux	4	4	0	0	407,053	620,035	212,010	
Story	14	15	1	1	934,662	1,024,007	89,345	
Tama	10	10	0	0	427,735	513,980	125,915	
Taylor	4	4	0	0	109,274	137,178	27,904	
Union	3	3	0	0	248,929	447,490	200,570	
Van Buren	4	4	0	0	52,640	65,109	12,769	
Wapello	4	4	0	0	810,487	1,437,555	627,068	
Warren	1	1	0	0	8,000	5,700		2,300
Washington	10	8	2	2	308,379	691,204	381,015	
Wayne	3	5	2	2	251,250	554,284	302,050	
Webster	9	10	1	1	445,712	738,696	352,334	
Winnebago	7	10	3	3	756,286	1,112,610	356,415	
Winneshek	2	10	8	8	25,428,675	1,773,541		704,134
Woodbury	4	4	0	0	952,594	969,696	16,202	
Worth	4	4	0	0	507,170	863,079	375,909	
Wright	4	4	0	0	132,453	288,305	176,480	
Total	306	774	48	80	64,802,168	79,141,726	16,375,554	2,135,502

* The total gross pounds of butter for the year ending September 30, 1894, was 64,802,168, but appeared in the eighth annual report as 62,577,519 pounds. This error occurred through a railroad failing to report shipment from Howard and Winneshek counties. For further information see page 43.

COUNTIES SHIPPING 1,000,000 OR MORE POUNDS OF BUTTER.

In the report of last year separate mention was made of all the counties shipping 1,000,000 or more pounds of butter. In that list there were but eighteen counties; this year the number reaches twenty-seven, and are as follows, showing not only the shipments for the two years, but the increase or decrease, as the case may be. They are arranged according to the amount of their shipments for the year 1895:

COUNTIES.	1895.	1894.	INCREASE.	DECREASE.
1. Clayton	3,311,215	3,220,009		28,206
2. Chickasaw	3,126,313	2,491,294	634,999	
3. Dubuque	2,995,035	2,429,745	565,290	
4. Delaware	2,985,041	2,400,857	584,184	
5. Jones	2,854,703	2,627,024	227,711	
6. Buchanan	2,622,003	2,451,700	446,280	
7. Fayette	2,300,005	2,454,255		80,540
8. Linn	2,353,297	2,111,791	241,506	
9. Butler	2,280,770	1,965,169	315,601	
10. Bremer	2,157,561	2,281,862		124,301
11. Black Hawk	2,034,574	1,879,619	154,955	
12. Winneshek	1,772,541	2,478,675		706,134
13. Mitchell	1,758,405	1,731,845	26,560	
14. Howard	1,728,253	1,473,978	254,275	
15. Hamilton	1,725,027	930,570	794,457	
16. Kossuth	1,622,221	1,567,684	54,537	
17. Story	1,624,007	954,002	670,005	
18. Wapello	1,437,555	810,487	627,068	
19. Rice	1,273,443	862,015	411,418	
20. Hardin	1,273,030	912,840	360,190	
21. Allamakee	1,226,415	1,226,426		11
22. Greene	1,164,278	1,164,278		
23. Grundy	1,130,600	820,007	310,593	
24. Jackson	1,145,226	947,253	197,973	
25. Winnebago	1,112,610	756,286	356,315	
26. Cerro Gordo	1,083,342	1,141,915		58,573
27. Palo Alto	1,075,105	1,234,770		162,575
Total	51,613,825	45,808,688	7,805,137	1,331,868
Net increase			5,964,397	

HOW THE LEADING COUNTIES RANK.

Clayton county still holds the lead; Chickasaw advances and changes places with Delaware, and Dubuque, which was seventh, is now third. Jones drops from third to fifth, and Fayette from fifth to seventh. Linn advances to eighth place, and the following counties enter the race for the top in the order named: Hamilton, Story, Wapello, Sac, Hardin, Greene, Grundy, Jackson and Winnebago. Gradually, but surely the dairy district of Iowa is extending westward.

BURLINGTON—CONTINUED.

Permit No. for year ending July 4, 1895.	Permit No. for year ending July 4, 1896.	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.	Highest test.	Lowest test.	No. tests below standard.	Average for 1895.
24	165	Swords, E. T.	Wagon	19	3.90	2.90	1	3.40
107	428	Thompson, W. H.	Wagon	16	4.60	3.00		3.61
130	53	Van Winkle, O. G.	Wagon	27	4.70	2.80	1	3.62
151	270	Vaughn, S. T.	Wagon	21	4.20	3.10		3.61
350	245	Vogelsang, H.	Wagon	8	3.80	3.00		3.41
	350	Woodward, E. H.	Wagon	1	3.40	3.40		3.40
	325	Wuelner, F.	Wagon	2	3.20	3.20		3.20

Total tests made for year ending October 31, 1895, 444; total number below standard, 4; average of the 31 highest tests, 4.44; average of the 31 lowest tests, 3.19; average of the 444 tests, 3.77.

CEDAR RAPIDS.

		Albert, S.	Wholesale	1	4.00	4.00		4.00
380	52	Bremer, L.	Wagon	7	4.30	3.40		3.91
195	97	Berry & Bears	Wagon	13	4.50	3.20		3.93
	63	Bivens, S. A.	Wagon	4	4.00	3.20		3.65
216	301	Bremes, Joseph F.	Depot					
71	99	Brock, R. G.	Wagon	7	5.20	3.40		4.20
		Buchanan, O.	Wholesale	5	4.20	3.00		3.32
		Buchanan, A.	Wholesale					
128	100	Bunger, E. W.	Wagon	11	4.60	3.40		4.03
	461	Calder, L. B.	Wagon	1	4.60	4.60		4.60
	377	Clarke, James	Depot	3	4.20	3.20		3.73
	376	Clarke, James	Wagon	8	4.20	3.40		3.85
	367	Crowe, S. R.	Wagon					
	469	Davis, C. H.	Wagon	1	3.40	3.40		3.40
		Donnan, W. J.	Wholesale					
		Dunne, J.	Wholesale	1	3.80	3.80		3.80
	65	Goulden, F. D.	Wagon	6	4.40	3.20		3.80
	422	Goulden, F. D.	Depot	1	4.20	4.20		4.20
	341	Groat, Bert.	Wagon	1	4.40	4.40		4.40
		Hartman, H. C.	Wholesale	3	4.00	3.00		3.40
		Hartman, W. H.	Wagon	4	4.20	3.40		3.85
	377	Helbig, H. A.	Wagon					
		Higgins, R.	Wholesale	5	4.00	3.40		3.80
	325	Hunter, W. H.	Wagon	5	4.40	3.00		3.80

LIST OF CITY MILK DEALERS.

Showing permit numbers for years ending July 4, 1895 and 1896; name and location; manner of delivering milk; number of tests; highest, lowest and average test; number of tests below standard, from November 1, 1894, to November 1, 1895.

BURLINGTON.

Permit No. for year ending July 4, 1895.	Permit No. for year ending July 4, 1896.	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.	Highest test.	Lowest test.	No. tests below standard.	Average for 1895.
283	307	Binder Bros.	Wagon	26	5.00	3.10		3.68
461	308	Binder, Theo.	Wagon	7	3.80	3.20		3.50
230	310	Bowman, H. C.	Wagon	25	5.40	2.70	1	3.52
124	186	Buhrmaster, G. H.	Wagon	18	4.00	3.40		3.71
	431	Chester, C. F.	Wagon	5	7.20	3.60		4.95
153	369	Dalley, C.	Depot	14	5.40	3.10		3.76
67	138	Duckstine, F.	Wagon	18	4.00	3.20		3.58
187	132	Ernst, F.	Wagon	10	4.20	3.00		3.49
361	316	Ernst, C. G.	Wagon	31	4.20	3.00		3.75
152	125	Grabenkamp, F.	Wagon	8	3.60	3.20		3.55
88	127	Gregg, B. F.	Wagon	21	4.90	3.10		3.80
458	276	Hacker, A.	Wagon	8	4.40	3.00		3.57
156	443	Hall, G. M.	Wagon	5	6.20	4.90		5.42
156	291	James, Joe	Wagon	21	4.00	3.00		3.48
191	259	Kestner, H. C.	Wagon	18	5.40	3.20		4.43
122	437	Leak, George	Wagon	9	4.20	3.10		3.73
121	287	Leak, H. D.	Wagon	12	5.20	2.60	1	3.68
232	308	Lenti, Andrew	Wagon	4	3.80	3.40		3.55
319	185	Lichtenberg, F.	Wagon	10	4.20	3.20		3.68
135	19	Parsons, F. M.	Wagon	13	5.80	3.80		4.80
85	34	Pratt, Charles	Depot	33	4.20	3.00		3.50
302		Rogers, F. L.	Wagon	9	3.90	3.00		3.33
49	366	Runge, E.	Depot	11	3.80	3.50		3.71
	35	Sourin, B.	Wagon					
273		Swendenburg, F. & Co.	Wagon	4	3.70	3.20		3.47

CEDAR RAPIDS—CONTINUED.

Permit No. for year ending July 4, 1905.	Permit No. for year ending July 4, 1906.	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.	Highest test.	Lowest test.	No. tests below standard.	Average for 1905.
269		Klinger, V.	Wagon	2	3.80	3.00		3.40
15	95	Kontney, J.	Wagon	11	6.00	3.80		4.45
64	94	Kilmeyer, F.	Wagon	17	4.80	3.00		3.80
70		Kilmeyer, F.	Wagon	2	4.00	4.00		4.00
14	129	Kitteman, J. S.	Wagon	6	4.40	3.80		4.00
415	88	Leusch, William	Wagon					
161	231	Ling, A.	Wagon					
214	158	McDowell, E. E.	Wagon	8	4.00	3.00		3.92
78	96	Meeker, J. W.	Wagon	12	4.30	3.30		3.90
60	51	Miller Bros.	Wagon	10	4.30	3.00		3.72
	333	Milnes, G. G.	Wagon					
269		Olney, Charles	Wagon	5	3.80	3.20		3.48
308	122	Perryman, Thomas	Wagon	8	4.00	3.80		4.17
64	216	Porter, J. S.	Wagon	8	4.80	3.20		4.00
59	205	Potnam, W. J.	Wagon	1	5.80	5.80		5.80
449	91	Richmond, N.	Wagon	1	4.40	4.40		4.40
282	288	Robb Bros.	Depot	11	4.40	3.20		3.91
391	121	Shafer, A.	Wagon					
292	93	Smith, A. H.	Wagon	3	4.40	4.20		4.32
		Smith, George	Wholesale	4	4.00	3.40		3.80
		Smith, C.	Wholesale	6	4.00	3.00		3.56
157	128	Smith, S. G.	Wagon	7	4.40	4.00		4.14
	57	Stang, F. F. & Son	Wagon	3	4.20	3.80		3.93
448	90	Stewart, F. C.	Wagon	7	4.30	2.40	2	3.51
304	241	Taft, C.	Wagon	4	4.00	3.00		3.74
462	196	Thompson, T.	Wagon	2	4.40	3.20		3.80
454	231	Umbdenstock, W.	Wagon	1	4.00	4.00		4.00
133	180	Usher, J.	Wagon	3	4.60	3.80		4.20
	89	Victorium, John	Wagon					
203		Wendler, T.	Wagon	4	4.00	2.00	1	3.20
	381	Wiley, William	Wagon	1	5.60	3.00		3.60
369		Wilant, D. W.	Wagon	5	4.80	3.00		3.84
13	87	Williams Bros.	Wagon	13	5.00	3.60		4.05
428	92	Wohen, John	Wagon					

Total number tests for year ending October 31, 1905, 252; total number below standard, 3; average of the 47 highest tests, 4.45; average of the 47 lowest tests, 3.74; average of the 252 tests, 3.97.

CLINTON.

Permit No. for year ending July 4, 1905.	Permit No. for year ending July 4, 1906.	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.	Highest test.	Lowest test.	No. tests below standard.	Average for 1905.
	229	Assenmaker, C.	Wagon	3	3.80	3.10		3.36
	54	115 Bach, John	Wagon	14	4.30	3.30		3.61
	182	376 Baer, J.	Wagon	10	4.30	3.00		3.88
	356	Baker, J. P.	Wagon	4	4.10	3.30		3.52
	97	23 Boynton, O. L., No. 1.	Wagon	13	4.70	3.00		3.72
	58	25 Boynton, O. L., No. 2.	Wagon	13	4.30	3.20		3.62
	410	210 Capton, C. F.	Wagon	13	4.60	3.30		4.14
	342	Carpenter, P.	Wagon	4	3.80	3.20		3.50
	56	200 Claussen, R.	Wagon	13	4.00	3.00		3.47
	419	286 Everman, H.	Wagon	10	4.20	3.30		3.72
	375	Fanger, Henry	Wagon	4	3.80	3.30		3.55
	472	197 Freda, M. C.	Depot	6	4.40	3.60		3.93
	7	228 Gertzen, Detlef	Wagon	12	4.60	3.00		3.62
	429	Gldenson, George	Wagon	1	4.00	4.00		4.00
	47	29 Haring, W. G.	Wagon	12	4.60	3.00		3.73
	238	Heath & Stockwell	Wagon	5	4.10	3.10		3.48
	48	220 Johnson, Nels.	Wagon	12	4.60	3.20		3.47
	181	Johnson, Albert	Wagon	2	4.20	3.60		3.90
	476	278 Johnson, Gus.	Wagon	9	4.10	3.10		3.71
	50	333 Klinge, T. C.	Wagon	12	4.20	3.00		3.57
	213	Leitz, F.	Depot	4	3.80	3.00		3.55
	163	211 Miller, M. C.	Wagon	13	4.00	3.20		3.56
	55	430 Morrisoy, Owen	Wagon	12	4.00	3.00		3.49
	184	Nicolalson, H.	Wagon	1	3.00	3.00		3.00
	333	Nisson, C.	Wagon	12	4.20	3.00		3.57
	53	114 Olson, S.	Wagon	12	4.00	3.00		3.30
	180	210 Olson, J. S.	Wagon	11	4.70	3.40		4.00
	52	Paulson, M.	Wagon	1	4.00	4.00		4.00
	179	93 Paulson, Carl	Wagon	9	4.20	3.00		3.57
	284	Person, Nels	Wagon	4	4.00	3.70		3.82
	51	320 Peterson, C.	Wagon	11	4.10	3.00		3.42
	4	18 Schmidt, P.	Wagon	11	3.80	3.60		3.48
	25	290 Seeser, Charles	Wagon	14	4.30	3.20		4.24
	480	212 Simmons, S.	Wagon	6	4.10	3.40		3.60
	432	Thompson, C.	Wagon	1	4.50	4.00		4.00
	420	349 Wilson, P. & Co.	Wagon	11	4.00	3.50		3.75

Total number tests made for the year ending October 31, 1905, 302; total number below standard, 0; average of the 36 highest tests, 4.11; average of the 36 lowest tests, 3.24; average of the 302 tests, 3.71.

NINTH ANNUAL REPORT OF THE
COUNCIL BLUFFS.

DAVENPORT.

Permit No. for year ending July 4, 1895.	Permit No. for year ending July 4, 1896.	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.	Highest test.	Lowest test.	No. tests below standard.	Average for 1895.
111	332	Arnold, P. J.	Wagon	18	4.40	3.00	.....	3.77
245	157	Baker, W. M.	Wagon	13	4.20	3.40	.....	3.68
248	.....	Beck, A.	Depot	6	4.00	3.00	.....	3.38
270	.....	Brown, G. L.	Wagon	11	4.10	3.00	.....	3.58
297	.....	Carver, S.	Wagon	9	4.00	3.30	.....	3.53
251	291	Easdale, E., No. 1.	Wagon	27	4.20	3.00	.....	3.53
306	.....	Easdale, E., No. 2.	Wagon	4	4.00	3.00	.....	3.70
405	380	Ellsworth & Lavenberg	Wagon	3	4.50	4.30	.....	4.23
292	.....	Ellsworth & Co	Wagon	17	4.80	2.80	1	3.92
68	.....	Erickson, A. S.	Wagon	3	3.90	3.80	.....	3.86
329	359	Green, Charles.	Wagon	12	3.60	3.20	.....	3.39
80	.....	Hunt, J. F.	Wagon	27	4.20	3.00	.....	3.50
385	.....	Jensen, Sam.	Wagon	9	3.70	3.50	.....	3.54
331	323	Johnson Bros.	Wagon	25	4.20	3.00	.....	3.76
450	70	Johnson, S.	Wagon	19	4.00	3.20	.....	3.61
390	334	Leonard, P.	Wagon	19	4.40	3.00	.....	3.64
246	156	Lewis, N. & Son.	Wagon	27	4.20	3.00	.....	3.64
119	302	Martin, H. H., No. 1.	Wagon	29	4.30	3.00	.....	3.67
304	.....	Martin, H. H., No. 2.	Wagon	6	3.80	3.40	.....	3.65
253	202	Millard, F. O.	Wagon	30	4.00	3.00	.....	3.36
252	233	Nelson, P.	Wagon	14	4.40	3.00	.....	3.63
250	191	Nelson, N. P.	Wagon	20	4.00	3.10	.....	3.68
247	253	Ourmin, E.	Wagon	19	3.80	3.00	.....	3.34
219	333	Ray, Jas.	Wagon	12	4.20	3.40	.....	3.80
290	255	Reid, A. H.	Wagon	13	4.20	3.20	.....	3.61
330	413	Richardson, Mrs. J.	Wagon	3	3.60	3.50	.....	3.58
301	.....	Robinson, G. A.	Wagon	5	6.40	4.30	.....	5.08
30	294	Scherrer, George	Wagon	19	5.00	3.40	.....	3.81
63	.....	Shaw, N. S.	Wagon	4	4.30	4.00	.....	4.15
199	219	Skodshohn, I.	Wagon	32	5.30	2.10	1	3.71
410	.....	Stevens, Jas.	Wagon	2	4.20	4.10	.....	4.15
451	149	Waterloo Creamery Co.	Wagon	19	4.80	3.40	.....	3.90
456	16	Wiatt, J. & Co.	Wagon	18	4.10	2.40	4	3.21

Total number of tests made for the year ending October 31, 1895, 496; total number tests below standard, 8; average of the 33 highest tests, 4.23; average of the 33 lowest tests, 2.53; average of the 496 tests, 3.70.

Permit No. for year ending July 4, 1895.	Permit No. for year ending July 4, 1896.	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.	Highest test.	Lowest test.	No. tests below standard.	Average for 1895.
444	73	Abraham, H. T.	Wagon	3	3.60	3.40	.....	3.53
77	194	Arnold, J.	Wagon	7	6.00	3.40	.....	4.31
21	20	Arp, Hans.	Depot	5	4.20	3.40	.....	3.70
424	490	Baker, Frank.	Wagon	4	4.00	3.50	.....	3.60
.....	67	Barghotz, J.	Wagon	8	4.20	3.40	.....	3.80
200	105	Boyer, B.	Wagon	4	4.00	3.00	.....	3.82
225	.....	Bieber, H.	Wagon	1	3.40	3.40	.....	3.40
297	.....	Blank, Wm.	Wagon	5	4.00	3.00	.....	3.72
63	.....	Blumer, O.	Wagon	8	4.40	3.20	.....	3.61
201	.....	Boltz, H.	Wagon	5	3.80	3.20	.....	3.48
379	27	Booth, C. H.	Wagon	5	3.80	3.40	.....	3.60
293	296	Bruhn, H.	Wagon	7	4.40	3.40	.....	3.46
.....	391	Christenson, C.	Wagon	1	4.00	4.00	.....	4.00
471	58	Coughlin, Thos.	Wagon	2	3.60	3.20	.....	3.40
190	207	Carwezell, Jno., No. 1.	Wagon	6	4.00	3.40	.....	3.70
.....	208	Carwezell, Jno., No. 2.	Wagon	1	3.60	3.60	.....	3.60
.....	385	Dismer, Wm.	Wagon	.....	.....	.....	.....	.....
372	.....	Dressell, F.	Wagon	6	4.20	3.40	.....	3.85
265	.....	Eggers, Hans.	Wagon	3	4.00	3.20	.....	3.60
342	.....	Einfield, E.	Wagon	2	4.20	4.00	.....	4.10
75	445	Fleming, P.	Wagon	5	4.20	3.20	.....	3.62
244	.....	Frahan, Hugo.	Wagon	3	4.60	3.60	.....	4.13
358	217	Gankler, Jos.	Wagon	6	5.40	3.50	.....	3.95
235	.....	Gayman, Thos.	Wagon	1	3.60	3.80	.....	3.60
163	.....	Gerdes, J.	Wagon	1	3.60	3.00	.....	3.60
259	.....	Goenwald, J.	Wagon	3	4.00	4.00	.....	4.00
145	101	Goetsch, H.	Wagon	5	4.80	4.00	.....	4.34
.....	394	Hasse, Henry.	Wagon	.....	.....	.....	.....	.....
163	289	Harrimann, H.	Wagon	5	5.40	3.00	.....	3.28
.....	423	Hames, Henry.	Wagon	.....	.....	.....	.....	.....
160	153	Harrison, J. W.	Wagon	7	4.40	3.20	.....	3.80
161	256	Hemmings, Mrs. Dora.	Depot	4	4.00	4.00	.....	4.00
174	49	Hener, Jno.	Wagon	9	4.20	3.40	.....	3.77
194	102	Hener, Claus.	Wagon	9	4.00	3.00	.....	3.73
.....	46	Howell & Prinz.	Wagon	5	5.90	3.20	.....	4.35

DAVENPORT—CONTINUED.

Permit No. for year ending July 4, 1896.	Permit No. for year ending July 4, 1896.	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.	Highest test.	Lowest t. st.	No. tests below standard.	Average for 1896.
215	106	Juergensen, J.	Wagon	9	3.70	3.00	3	3.44
76	249	Kauplinsky, J.	Wagon	3	3.80	3.40	0	3.67
477	103	Kelling, F.	Wagon	9	4.00	3.60	0	3.85
18	48	Kellogg, H.	Wagon	3	3.60	3.20	0	3.46
183	230	Koep, Hans J., No. 1.	Wagon	5	3.60	3.40	0	3.52
	314	Koep, Hans J., depot.	Wagon	3	4.50	3.20	0	3.63
260	235	Koeb, Jno.	Wagon	8	4.20	3.20	0	3.57
178	209	Lange, H.	Wagon	9	4.00	3.00	0	3.67
299	206	Maves, Jno.	Wagon	6	3.60	3.20	0	3.43
202	21	Mess, Henry.	Wagon	7	4.00	3.00	0	3.54
284		Miller, Herman	Wagon	3	3.60	3.60	0	3.60
100		Moffatt, G. A.	Wagon	1	4.00	4.00	0	4.00
208	285	Nagel, H.	Wagon	8	3.80	3.00	0	3.42
147	116	Nason, B. F.	Wagon	7	5.00	3.40	0	4.21
	437	Nichols, Mrs. J.	Wagon	3	3.40	3.00	0	3.13
291		Peterson, P.	Wagon	6	4.00	3.40	0	3.77
198	328	Pumpkin, Wm.	Depot	3	5.50	5.00	0	5.00
188	145	Raum, F.	Wagon	8	5.00	3.00	0	4.20
211	188	Raum, Max.	Wagon	11	3.80	3.00	0	3.44
146	231	Reichert, P.	Wagon	10	4.00	3.20	0	3.48
278	104	Rissmann, C.	Wagon	3	3.60	3.40	0	3.46
213	47	Ruch, P.	Wagon	9	4.40	3.20	0	3.70
	383	Ruchmann, O.	Wagon	1	3.60	3.60	0	3.60
345		Sass, C.	Wagon	3	4.00	3.60	0	3.73
192	193	Severston, C. F.	Wagon	5	3.70	3.20	0	3.46
335		Schinditz, A.	Wagon	6	4.00	3.00	0	3.50
200	10	Schmidt, Jno.	Wagon	11	4.20	3.20	0	3.65
384	50	Schnoor, C.	Wagon	3	5.20	3.60	0	3.20
220	205	Schramm, Max.	Wagon	7	4.20	3.40	0	3.71
450		Smith, A. G.	Wagon	3	3.80	3.60	0	3.67
217	221	Springhorn, P.	Wagon	7	4.80	3.00	0	3.73
159	317	Steen, Fritz	Wagon	7	4.40	3.50	0	3.93
143	218	Thlessen, Paul.	Wagon	9	4.20	3.60	0	3.82
160	28	Walk, J.	Wagon	9	4.80	3.60	0	4.07
209	104	Wendhausen, H.	Wagon	5	5.70	3.00	0	3.90

DAVENPORT—CONTINUED.

Permit No. for year ending July 4, 1896.	Permit No. for year ending July 4, 1896.	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.	Highest test.	Lowest test.	No. tests below standard.	Average for 1896.
237		Willers, H.	Wagon	3	3.50	3.20	0	3.30
307		Zarn, Jno.	Wagon	6	4.00	3.20	0	3.60
241		Zarn & Flambo.	Wagon	3	3.80	3.40	0	3.30
44		Zinger, G.	Wagon	1	4.00	4.00	0	4.00

Total number of tests for the year ending October 31, 1895, 390; total number of tests below standard, 0; average of the 73 highest tests, 4.30; average of the 73 lowest tests, 3.44; average of the 390 tests, 3.60.

DES MOINES.

368		Allen, Mrs. W.	Depot	3	3.70	3.50	0	3.63
343	281	Altman, P. G.	Wagon					
242		Anderson, P. H.	Depot	8	3.30	3.20	0	3.42
127	168	Arthur, R. C.	Wagon	12	5.00	2.80	1	3.44
466	144	Bergman, Charles.	Depot	3	3.40	3.20	0	3.37
1	172	Blackman, F. M.	Wagon	14	4.20	3.20	0	3.57
216	221	Bragdon Brothers	Wagon	14	4.40	3.40	0	3.76
317	322	Bragdon Brothers	Wagon	10	3.70	3.10	0	3.37
	130	Breeding, L. J.	Wagon	6	4.00	3.50	0	3.63
227		Brennan, J. O.	Depot	1	2.00	2.00	1	2.00
218	78	Brown & Monteth.	Depot	11	4.40	2.40	3	3.34
427	181	Burke, U. J.	Wagon	11	4.00	3.00	0	3.49
	131	Campbell, E.	Wagon	11	4.80	3.00	0	3.89
	224	Carpenter, N. B.	Depot	1	3.60	3.60	0	3.60
44	66	Churchman, W. W.	Wagon	11	3.80	2.20	1	3.34
340	137	Clark, H. S.	Depot	10	4.40	3.00	0	3.83
100	132	Cruikshank, J.	Wagon	13	4.40	3.20	0	3.72
416		Delemar, W. D.	Depot	4	4.20	3.40	0	3.85
430		DeLoeg, W. F.	Wagon	5	4.20	3.20	0	3.71
113	77	Des Moines Dairy Company	No. 1 wagon	6	5.20	3.40	0	3.90
114	78	Des Moines Dairy Company	No. 2 wagon	15	4.00	2.60	1	3.70
115	79	Des Moines Dairy Company	No. 4 wagon	9	3.60	2.20	2	3.24
118	80	Des Moines Dairy Company	No. 5 wagon	12	4.80	3.30	0	3.84
112	76	Des Moines Dairy Company	Depot	20	4.00	2.40	2	3.40
442	378	DeVore, J. E. & Co.	Depot	8	4.10	3.40	0	3.60
25		Donaphin, A. A.	Wagon	6	4.40	3.60	0	4.03
2	2	Doolittle, J. W.	Wagon	8	4.20	3.30	0	4.00

DES MOINES—CONTINUED.

Permit No. for year ending July 4, 1906	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.			
			Highest test.	Lowest test.	No. tests below standard.	Average for 1905.
405	308 Dunne, G. G.	Wagon	6	4.00	3.70	4.00
407	235 Ehle & Ehle	Depot	6	4.60	3.50	4.18
303	282 Falbo, P.	Depot	12	4.60	3.30	3.50
417	311 Felt, G. W.	Wagon	8	4.50	3.80	4.23
314	371 Franco, E. M.	Depot	8	4.00	3.20	3.50
11	Frisk, P. E.	Wagon	2	3.00	3.50	3.05
253	Gardner, R. E.	Wagon	1	4.40	4.40	4.40
366	Gell, F. M.	Wagon	2	3.40	3.30	3.35
258	175 Gordon, William	Depot	7	4.10	3.60	3.68
65	Grand Avenue Creamery	Wagon	8	3.80	3.20	3.46
338	Grand Avenue Creamery	Depot	5	4.00	2.60	1 8.40
310	42 Graham, M. J.	Wagon	12	4.00	3.00	3.29
454	259 Griffin, P. J.	Wagon	3	4.10	3.50	3.75
388	300 Harding, A. W.	Depot	13	4.00	2.40	1 3.55
61	246 Hawks Bros.	Depot	11	4.00	3.00	4.12
115	61 Hill, W.	Depot	2	4.00	3.60	3.80
282	Hockersmith, J. S.	Depot	2	3.80	3.20	3.50
293	Homan, O. M.	Depot	8	3.50	2.50	2 5.00
61	293 Howells, W. C.	Wagon	2	4.00	3.40	3.70
81	Howard's Dalry	Wagon	2	4.70	3.80	4.25
229	Huntton, H. M.	Wagon	16	4.50	3.00	3.45
46	24 Johnson, C. R.	Wagon	12	4.60	3.40	3.72
408	3 Kaminsky, J.	Wagon				
394	135 King, G. F.	Wagon	7	4.20	3.50	3.60
50	65 Lane, A. C.	Wagon				
81	Lelpeld & Petticrew	Depot	2	4.20	3.40	3.80
31	130 Lowe, S. J.	Depot	11	5.50	3.40	4.40
288	170 Maple, M. C.	Wagon	10	4.40	3.40	3.85
373	373 Markley, J. C.	Wagon	2	4.00	3.70	3.85
45	174 Mathias, C.	Wagon	10	4.60	3.10	3.71
42	214 McConnell Bros.	Wagon	8	4.40	3.20	3.65
460	312 McCowan Bros.	Wagon	8	4.10	3.30	3.54
32	13 McPherrin, J. M.	Depot	12	4.00	3.00	3.58
365	Miller, M. J.	Depot	2	4.10	4.00	4.05
468	279 Miller, M. H.	Depot	8	4.80	2.20	1 3.40

DES MOINES—CONTINUED.

Permit No. for year ending July 4, 1906	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.			
			Highest test.	Lowest test.	No. tests below standard.	Average for 1905.
441	281 Monroe, M. E.	Wagon	10	4.60	3.60	4.03
36	215 Mueller, J. M.	Wagon	7	4.70	2.80	1 3.94
274	Neison & Co.	Wagon	4	4.30	3.70	4.02
33	50 Oleson, J.	Wagon	8	3.80	3.00	3.86
432	12 Oungst, G. N.	Wagon	17	4.00	2.80	4 3.28
211	141 Patton, H. A.	Depot	12	4.80	2.00	1 3.43
231	259 Patton, F. G.	Wagon	18	5.40	3.60	4.00
323	387 Paul, P.	Depot	10	4.60	3.30	3.77
114	223 Payton, W. W.	Wagon	16	4.60	3.10	3.54
373	Pickering, H.	Wagon	2	4.20	3.80	4.00
481	Pickering, Bros.	Wagon	2	4.20	3.90	3.75
411	Pickering, O. B.	Wagon	1	4.10	4.10	4.10
142	182 Proctor, George	Wagon	4	4.10	3.30	3.87
388	Pugh, Mrs. H. A.	Depot	3	4.30	3.70	3.53
288	412 Rhea, E. E.	Wagon	12	5.00	3.20	3.68
411	373 Ring, F. M.	Wagon	10	4.10	3.50	3.86
39	248 Rogers, R.	Depot	11	4.60	3.00	3.30
364	247 Sanders, H.	Depot	10	3.80	3.30	3.53
375	271 Sarchfield, J. P.	Depot	8	4.20	2.10	2 3.40
474	374 Schlenker, C.	Wagon	6	4.30	3.80	3.84
49	64 Schoenfeldt, G.	Wagon	9	3.80	3.10	3.48
98	Schlunker, G. T.	Wagon	1	4.60	4.50	4.50
165	177 Scott, W. W., & Co.	Wagon	6	4.20	3.40	3.83
426	138 Sideors, H. A.	Depot	7	4.00	3.10	3.67
38	275 Smith, J. S.	Wagon	12	5.20	2.60	1 3.31
415	Smith, L.	Wagon	4	4.40	3.30	3.95
379	Stark & Bergman	Depot	6	4.00	2.40	1 3.08
186	Stebbins & Heavilin	Wagon	8	4.30	3.00	3.97
397	353 Stebbins, W. F.	Wagon	10	4.80	3.20	3.90
412	227 Sitts, S. S.	Wagon	8	4.40	3.50	4.00
130	176 Stookey, D. M.	Wagon	10	5.20	3.00	4.01
402	402 Stookey, D. M.	Wagon No. 2	1	3.60	3.60	3.60
438	372 Stradley, W. W.	Wagon	13	4.30	3.20	3.85
211	168 Strickland, L. M.	Wagon	12	4.20	3.00	3.73

DES MOINES—CONTINUED.

Permit No. for year ending July 4, 1906.	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.	Highest test.	Lowest test.	No. tests below standard.	Average for 1906.
320	134 Stubbs, William.....	Wagon.....	10	4.40	3.00	.....	3.47
.....	102 Terry, M. M.....	Depot.....	1	3.90	3.00	.....	3.00
56	41 Terry & West.....	Wagon.....	12	3.80	3.50	1	3.20
430	161 Terry, George.....	Wagon.....	6	4.10	3.30	.....	3.68
.....	39 Terry, A.....	Wagon.....	6	4.50	3.60	.....	3.88
67	40 Terry, A.....	Depot.....	8	4.00	3.60	.....	3.68
407	187 Tyler, J.....	Wagon.....	12	4.20	3.10	.....	3.72
254	239 Vall's Dairy.....	Depot.....	6	4.80	3.40	.....	3.80
255	238 Vall's Dairy.....	Wagon.....	3	4.40	3.20	.....	3.70
.....	113 Vander Linden, L. J.....	Depot.....	12	4.60	3.20	.....	3.81
305	494 Von Steuben, J. P.....	Wagon.....	11	4.40	3.30	.....	3.82
367	405 Von Steuben, J. P.....	Wagon.....	13	4.00	3.20	.....	3.55
.....	112 West, C. P.....	Wagon.....	2	3.60	3.20	.....	3.40
210	139 West, F.....	Wagon.....	11	4.10	3.30	.....	3.73
17	383 Wessinger & Co.....	Depot.....	12	4.00	3.20	.....	3.66
.....	340 Williamson, James.....	Wagon.....	.....	.....	.....	.....	.....
138	Wilson, L. E.....	Wagon.....	4	3.80	3.40	.....	3.62
423	Wilson, A. R.....	Depot.....	5	5.80	3.60	.....	4.23
315	Wilson, J. F.....	Depot.....	6	4.30	3.00	.....	3.24
437	133 Wilson, I. J., & Sons.....	Depot.....	9	4.80	3.10	.....	3.65
274	297 Wollbigge, F.....	Depot.....	9	3.80	3.40	.....	3.52
40	Woodward & Morgan, No. 1.....	Depot.....	6	4.40	3.40	.....	3.78
41	Woodward & Morgan, No. 2.....	Depot.....	2	4.00	3.00	.....	3.80
403	199 Wood, W. T.....	Depot.....	9	4.00	3.60	.....	3.48
16	60 Wormlesdorf, T. H.....	Depot.....	12	4.20	2.50	1	3.90
256	178 Young, M. E.....	Wagon.....	14	4.50	3.20	.....	3.80
407	154 Young, E. B.....	Wagon.....	2	4.20	3.80	.....	4.00
161	140 Zim, D.....	Depot.....	12	4.60	3.10	.....	3.56
429	434 Zickafoose, W. C.....	Wagon.....	12	4.30	3.40	.....	3.70

Total tests made for year ending October 31, 1903, 973; average of the 122 highest tests, 4.21; average of the 122 lowest tests, 3.30; number of tests below standard, 28; average of the 973 tests, 3.69.

DUBUQUE.

Permit No. for year ending July 4, 1906.	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.	Highest test.	Lowest test.	No. tests below standard.	Average for 1906.
365	269 Adam, M.....	Wagon.....	6	4.00	3.80	.....	3.93
307	364 Barrett, John.....	Wagon.....	8	4.00	3.00	.....	3.67
.....	300 Brodenbender, Mrs.....	Wagon.....	2	4.00	3.40	.....	3.70
.....	243 Bolzein & Bardowitz.....	Wagon.....	10	5.20	3.40	.....	4.06
320	418 Brinke, C.....	Wagon.....	11	6.00	3.90	.....	4.13
170	267 Buckingham, T.....	Wagon, No. 1.....	12	4.00	3.20	.....	3.75
.....	268 Buckingham, T.....	Wagon, No. 2.....	4	4.00	3.00	.....	3.45
482	277 Conzett, A.....	Wagon.....	2	4.40	4.40	.....	4.40
433	420 Cushing, William.....	Wagon, No. 1.....	10	5.40	3.00	.....	3.67
.....	421 Cushing, William.....	Depot.....	4	4.20	3.60	.....	3.90
469	31 Eagle Butter and Egg Co.....	Depot.....	5	4.30	3.20	.....	3.94
370	352 Finesch, J., & Sons.....	Depot.....	8	5.00	3.00	.....	4.12
271	350 Finesch, J., & Sons.....	Wagon, No. 1.....	9	4.50	3.00	.....	4.12
272	351 Finesch, J., & Sons.....	Wagon, No. 2.....	6	5.60	3.00	.....	3.73
473	311 Ford, James.....	Wagon.....	6	4.00	3.00	.....	3.73
94	417 Gadient, John.....	Wagon.....	11	4.20	3.00	.....	3.88
358	225 Gartner, A.....	Wagon.....	11	5.00	3.00	.....	4.02
478	Gray, C.....	Wagon.....	5	5.00	3.20	.....	4.28
479	Gray, C.....	Depot.....	1	3.60	3.60	.....	3.60
.....	Griffith, N.....	Wagon.....	7	4.00	3.00	.....	3.51
.....	418 Hackers, F.....	Wagon.....	2	3.60	3.60	.....	3.60
95	146 Helme, E.....	Wagon, No. 1.....	11	5.00	3.00	.....	4.34
90	147 Helme, E.....	Wagon, No. 2.....	9	4.20	3.20	.....	3.82
363	392 Herron, H. L.....	Wagon.....	8	4.80	3.20	.....	4.07
190	184 Hoferlin, James.....	Wagon.....	6	4.40	3.00	.....	3.53
92	190 Jetkin, J. H.....	Wagon, No. 1.....	12	3.90	3.00	.....	3.62
93	245 Jetkins, J. H.....	Wagon, No. 2.....	7	4.60	3.30	.....	3.80
396	460 Knechtel, A.....	Wagon.....	9	5.00	3.00	.....	3.81
102	439 McKinney, C.....	Wagon.....	1	4.50	4.50	.....	4.50
90	118 Meyer, H.....	Wagon, No. 1.....	7	5.00	3.30	.....	4.41
91	119 Meyer, H.....	Wagon, No. 2.....	7	5.00	3.30	.....	4.40
175	145 Mueller, E.....	Depot.....	7	5.60	3.60	.....	4.17
170	143 Mueller, E.....	Wagon.....	7	5.00	3.20	.....	4.17
.....	415 Musschl, F.....	Wagon.....	2	4.80	3.40	.....	4.10
165	227 Paley, F.....	Wagon, No. 1.....	8	5.20	3.00	.....	3.67

DUBUQUE—CONTINUED.

Permit No. for year ending July 4, 1906.	Permit No. for year ending July 4, 1906.	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.	Highest test.	Lowest test.	No. tests below standard.	Average for 1906.
166	165	Paley, F.	Wagon, No. 2	4	3.30	3.00	3	3.05
167	165	Paley, A.	Wagon	8	5.80	3.60	3	4.01
346	346	Pfoid, F. J.	Wagon	4	5.00	4.10	1	4.47
29	168	Prysts, R.	Wagon	9	4.00	3.20	3	3.71
98	315	Runyan, G. H.	Wagon	6	5.00	3.60	1	4.00
101	101	Schlegel, M.	Wagon	9	4.60	3.40	3	3.80
400	400	Schoeter & Stiener.	Wagon	1	4.00	4.00	0	4.00
97	37	Seeman, P.	Wagon	9	5.00	3.50	1	4.05
363	353	Sheridan, B.	Wagon	11	6.00	3.20	1	4.27
267	180	Spinetzky, A.	Wagon	12	5.00	3.00	1	4.07
402	81	Supple, M. F.	Wagon	3	3.80	3.40	0	3.67
350	432	Sutter, L.	Wagon	6	5.20	4.00	1	4.40
323	298	Thorman, G. A.	Wagon, No. 1	7	5.00	3.40	1	4.13
292	297	Thorman, G. A.	Wagon, No. 2	5	5.00	3.00	1	3.88
284	296	Thorman, G. A.	Depot	6	6.00	3.20	1	3.97
321	109	Walker, C. H.	Wagon	10	4.40	3.20	1	3.91
361	459	Willand, A.	Wagon	8	5.00	3.50	1	4.22
479	414	Wiest, H.	Wagon	7	4.00	3.40	1	3.73
125	117	Wormington, E.	Wagon	4	6.00	3.00	1	4.35
401	401	Woller, W. H.	Wagon	3	5.00	4.00	0	4.43
424	424	Zeigler, C.	Wagon	5	4.20	3.30	1	3.84

Total number tests made for the year ending October 31, 1905, 378; total number tests below standard, 9; average of the 50 highest tests, 4.40; average of the 60 lowest tests, 3.13; average of the 578 tests, 3.70.

KEOKUK.

26	17	Driffield, H.	Wagon	23	6.00	3.80	1	4.80
377	377	Emerson & Kelth	Wagon	15	5.00	3.50	1	4.53
423	423	Emerson, J. H.	Wagon	7	4.40	3.70	1	4.06
104	123	Ferris, Robert, Jr.	Wagon	22	5.00	4.00	1	4.43
361	110	Hunt, R. A.	Wagon	20	5.20	3.40	1	4.34
130	130	Jacob, J. L.	Wagon	3	6.00	4.00	0	4.07
421	232	Keokuk Dairy Co.	Wagon	5	4.40	3.60	1	3.92
383	234	Ketteren & Koss	Wagon	23	6.00	3.90	1	4.72
470	221	Knox, John	Wagon	8	5.20	3.60	1	4.05
229	85	Lang, Fred	Wagon	19	5.00	3.30	1	4.40

KEOKUK—CONTINUED.

Permit No. for year ending July 4, 1906.	Permit No. for year ending July 4, 1906.	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.	Highest test.	Lowest test.	No. tests below standard.	Average for 1906.
348	222	Neeson, C. S.	Wagon	4	6.00	4.60	1	5.40
348	348	Patterson, Mrs. G. E.	Wagon	12	5.30	3.10	1	4.04
348	350	Putnam, S. and J. M.	Wagon	12	7.20	3.30	1	5.00
281	192	Raber, C. N.	Wagon	23	5.40	3.70	1	4.42
29	169	Safford, C. C.	Wagon	19	4.80	3.50	1	4.20
83	103	Sample, J. L.	Wagon	18	7.20	3.00	1	4.74
128	86	Schappoch, W. J.	Wagon	16	5.30	3.70	1	4.28
414	414	Snyder, B.	Wagon	3	4.40	3.50	0	4.23
99	84	Wright, C. A.	Wagon	16	5.00	3.20	1	4.03
84	159	Yenawine, W. H.	Wagon	12	5.60	3.90	1	4.16

Total number of tests made for the year ending October 31, 1905, 289; number of tests below standard, 6; average of the 20 highest tests, 5.45; average of the 20 lowest tests, 3.58; average of the 289 tests, 4.33.

MUSCATINE.

318	318	Beegner, C.	Wagon	16	5.00	2.80	1	3.75
10	30	Bierman, H. B.	Wagon, No. 1	33	4.80	3.40	1	3.91
11	31	Bierman, H. B.	Wagon, No. 2	25	4.80	3.80	1	4.22
13	56	Dankert, John	Wagon	29	4.20	3.30	1	3.75
134	303	Greenaway, Mrs. J.	Depot	15	4.40	3.30	1	3.69
123	305	Harris Bros.	Wagon	42	4.60	2.60	1	3.61
431	55	Jarvis & Son	Wagon	17	4.40	3.40	1	4.06
197	8	Lake, P. B.	Wagon	34	5.00	3.20	1	4.30
3	200	Leundecker, C.	Wagon	36	4.80	3.40	1	3.96
173	173	Lord, B. W.	Wagon	19	5.70	3.00	1	3.81
78	54	Mittman Bros.	Wagon	32	4.40	2.80	1	3.57
306	130	Oglvie, W. J.	Wagon	21	5.00	3.60	1	3.68
410	22	Scott, J. M.	Wagon	27	4.80	3.60	1	3.95
154	62	Thomas, J. J.	Wagon	2	5.40	2.60	1	4.00
22	9	Will, C. H.	Wagon	21	5.00	3.00	1	3.51
127	254	Will Bros.	Wagon	38	4.60	3.00	1	3.74
283	283	Wintermonke, B. D.	Depot	4	5.20	4.20	0	4.55

Total number tests made for the year ending October 31, 1905, 414; total number tests below standard, 7; average of the 17 highest tests, 4.80; average of the 17 lowest tests, 3.12; average of the 414 tests, 3.92.

OTTUMWA.

Permit No. for year ending July 4, 1896.	Permit No. for year ending July 4, 1896.	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.	Highest test.	Lowest test.	No. tests below standard.	Average for 1896.
370		Baker, J. H.	Wagon	3	4.50	3.10		3.70
212	171	Bizer, J. F.	Wagon	16	5.00	3.40		4.17
368		Burns, E. F.	Depot	1	3.80	3.80		3.80
189	179	Daggert, E.	Wagon	17	6.30	3.10		4.00
376		Darver, F. W.	Wagon	4	4.20	3.20		3.87
131	74	French, Mrs. E. K.	Wagon	13	4.50	3.50		3.63
126	36	Fullmer, M. B.	Wagon	13	4.10	2.70	1	3.48
185		Harsh & Simmons	Wagon	10	4.40	3.60		3.80
420	111	Harsh, J.	Wagon	9	5.00	3.00		3.90
443	168	Hutson, T. L.	Wagon	11	6.00	3.00		3.55
386		Kendall, William	Wagon	13	5.00	3.30		4.28
384		Kirkhart H. C. & C. H.	Wagon	1	4.00	4.00		4.00
264	284	Michael, B. F.	Wagon	16	6.00	3.20		4.34
162	183	Montague, H.	Wagon	19	7.00	3.20		4.58
203	71	Newman, George W.	Wagon	18	5.40	3.30		3.98
371		Parker, J. S.	Wagon	1	4.80	4.80		4.80
406	330	Rush, D. J.	Wagon	14	4.30	3.20		3.81
413	313	Rupe, J. A.	Wagon	10	5.70	3.50		4.34
219		Shreve, Thomas	Wagon	7	5.50	3.60		4.44
372		Simmons, N. C.	Wagon	5	5.00	3.40		4.04
213	45	Spankower, L. L.	Wagon	13	6.00	2.40	1	3.83
171		Stewart, A. L.	Wagon	3	4.40	3.20		3.87
141		White, E. S.	Wagon	1	4.40	4.20		4.40

Total number of tests made for the year ending October 31, 1895, 218; total number of tests below standard, 2; average of 23 highest tests, 5.20; average of 23 lowest tests, 3.46; average of 218 tests, 4.62.

SIOUX CITY.

337		Akranson, O.	Wagon	6	4.00	3.20		3.60
254	163	Baby Milk Dairy	Wagon	10	4.40	3.60		4.01
468		Bradstreet, Chas.	Wagon	5	4.00	3.20		3.92
327	343	Bradstreet, A. J.	Wagon, No. 1.	11	4.00	3.00		3.74
328	344	Bradstreet, A. J.	Wagon, No. 2.	8	4.30	3.00		3.80
240	329	Bradstreet, T. E.	Wagon	13	5.00	3.20		3.75
354		Buche, J. H.	Depot	7	3.70	3.00		3.41
345		Clark, J. M.	Wagon	7	3.60	3.20		3.45

SIOUX CITY—CONTINUED.

Permit No. for year ending July 4, 1896.	Permit No. for year ending July 4, 1896.	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.	Highest test.	Lowest test.	No. below standard.	Average for 1896.
253		Fahey, M.	Wagon	2	3.60	3.40		3.50
228	330	Francis, L.	Wagon	14	5.30	3.00		3.47
356	407	Fristie, W.	Wagon	10	4.10	3.00		3.71
205	400	Heath, D. B.	Wagon	11	4.40	3.00		3.90
233	382	Herman, W. M.	Wagon	13	4.00	3.00		3.68
	386	Inglehue, J. S.	Wagon	1	3.40	3.40		3.40
336	347	Jensen & Freese	Wagon, No. 1.	15	5.00	3.00		4.00
337	348	Jensen & Freese	Wagon, No. 2.	13	4.00	3.00		3.65
295		Jersey Milk Co.	Wagon	3	3.80	3.80		3.80
435	456	Johnson, C.	Wagon	6	3.40	3.00		3.22
305	339	Johnson, A. R.	Depot	10	3.90	3.20		3.71
223	396	Kruman, L.	Wagon	13	5.00	3.00		3.94
	469	Mahoney, Wm.	Wagon	2	4.00	3.60		3.80
430	602	McNamara, R. E.	Wagon	6	4.20	3.20		4.10
	442	Miller, W. E.	Wagon	1	3.40	3.40		3.40
208	83	Morgan, C. H.	Depot	10	4.00	3.10		3.75
168	283	Moulin, W. H.	Wagon	9	4.00	3.40		3.68
355	357	Newguard, A.	Wagon	7	3.90	3.40		3.63
82	188	Oleson, F. & Son	Wagon	23	4.10	3.00		3.50
352		Pegar & Britton	Wagon	2	3.80	3.60		3.70
434	319	Perrasso & Gambreno	Depot	8	4.00	4.00		4.00
237	134	Pfoid, L.	Wagon	11	4.20	3.00		3.51
246		Pfoid, C.	Wagon	5	3.70	3.70		3.70
388	443	Ray, W. D.	Wagon	11	4.60	3.50		3.65
322	457	Reese, C.	Wagon	2	3.40	3.20		3.30
433		Reynolds, J. F.	Wagon	9	4.10	2.60	1	3.45
300	346	Robinson, C. M.	Wagon	9	4.20	3.60		3.97
254	406	Rowe, J. N.	Wagon	16	4.00	3.00		3.66
409	401	Schelker, W. O.	Wagon	14	4.10	3.30		3.76
318	297	Shepard, J. S.	Wagon	10	4.30	3.20		3.97
418	354	Sherman, E. D.	Depot	6	4.00	3.00		4.83
395		Sioux City Creamery	Depot	1	3.60	3.60		3.60
333	436	Smithers, T. H.	Wagon	6	4.00	3.40		3.57
334	260	Sorrenson, C.	Wagon	11	4.00	3.00		3.59
5	14	Storer, A. W.	No. 1 wagon	19	4.10	3.20		3.53

SIOUX CITY—CONTINUED.

Permit No. for year ending July 4, 1895.	No. of tests made for year ending July 4, 1895.	NAME.	MANNER OF DELIVERING MILK.	No. of tests made.	Highest test.	Lowest test.	No. tests below average.	Average for 1895.
6	15	Storer, A. W.	No. 2 wagon	5	3.80	3.10	...	3.59
463	107	Sutcliffe, Jas.	Depot	2	4.00	3.00	...	3.50
353	233	Swanson, S. A.	Wagon	10	4.10	3.40	...	3.80
295	...	Thompson, J. F.	Wagon	5	3.80	3.40	...	3.62
110	82	Treadwell, T. P.	Wagon	16	4.00	3.20	...	3.68
334	154	Upton, J. L.	Wagon	6	4.00	3.40	...	3.85
389	336	Washington, A. L.	Depot	9	4.20	3.60	...	3.92
27	351	Wilcox, D. O.	Wagon	11	4.00	3.00	...	3.85
...	26	Wilcox, D. O.	Wagon	17	5.00	3.20	...	4.01
432	5	Woodcock, A. C.	Depot	6	4.00	3.60	...	3.92
8	6	Woodcock, A. C.	No. 1 wagon	10	4.60	3.20	...	3.81
9	7	Woodcock, A. C.	No. 2 wagon	8	4.10	3.20	...	3.64

Total tests made for year ending October 31, 1895, 479; total number below standard, 1; average of the 55 highest tests, 4.05; average of the 55 lowest tests, 3.23; average of the 479 tests, 3.70.

RECAPITULATION.

Showing the total number of dealers, total number of tests made, number below standard, average for each city, and the eleven combined, from November 1, 1894, to November 1, 1895.

LOCATION.	No. of dealers.	No. of tests made.	No. of tests below standard.	Average test.
Burlington	32	444	4	3.77
Cedar Rapids	47	552	3	3.97
Clinton	36	369	...	3.71
Council Bluffs	33	495	6	3.70
Davenport	73	390	...	3.60
Des Moines	122	973	23	3.69
Dubuque	60	378	...	3.70
Keokuk	20	280	...	4.36
Muscatine	17	414	7	3.69
Ottumwa	23	218	2	4.02
Sioux City	55	479	1	3.70
Total number dealers	518			
Total tests made		4,533		
Total tests below standard			51	
Average for the eleven cities				3.82

PROSECUTIONS.

The following named persons have been prosecuted during the past year for violation of the milk law:

BURLINGTON.

December 22, 1894, information was filed accusing H. D. Leak of selling partially skimmed milk as whole milk. The defendant plead "not guilty," asking for time to prepare for trial, which was granted. On January 15th the court found the defendant guilty as charged and imposed a fine of \$25 and costs. Defendant gave notice of an appeal and filed an appeal bond in the sum of \$100. January 18th fine and costs were paid and defendant discharged.

January 7, 1895, information was filed accusing H. C. Bowman of the offense of exposing for sale skim milk. On January 8th the defendant was arraigned and plead "not guilty." Additional time was granted defendant to prepare for trial January 14th the defendant came into court and withdrew his plea of "not guilty" and entered a plea of "guilty" as charged in the information. The court imposed a fine of \$25 and costs, amounting in all to \$30.15.

On January 7, 1895, information was filed accusing E. J. Swords of exposing for sale skim milk. The defendant appeared January 8th and plead "not guilty," and asked for time to prepare for trial. The court fixed January 14th at 9 o'clock A. M., as the time. At this time the defendant made no defense, the court found him guilty as charged in the information and ordered defendant to pay a fine of \$25, and costs—amounting in all to \$30.15. This amount was paid by defendant and he was discharged.

CEDAR RAPIDS.

Theodore Wendler offered for sale June 14th milk testing 2 per cent, which is below legal standard, and information was filed to that effect. He appeared before the court, entered a plea of "guilty" and was fined \$25 and costs.

COUNCIL BLUFFS.

On May 6th John and James Wiatt were arrested and brought into court on a charge of selling skim milk as whole milk. The state failed to prove the charge to the satisfaction of the justice and defendants were discharged.

May 9th Charles Green was arrested for selling skim milk. The defendant plead "guilty" to the charge and the court assessed a fine of \$25 and costs.

DES MOINES.

Information was filed May 31, 1895, charging L. H. Cordry, manager of the Des Moines Dairy company, of the offense of selling and exposing for sale milk that tested below the legal standard. By demand of the defendant a jury trial was granted and a verdict of "guilty" as charged in the information was rendered. The court imposed a fine of \$40 and costs. An appeal to the district court was taken, but later the defendant paid the fine and costs and was discharged.

May 31, 1895, an information was filed charging Terry & West with the offense of selling or offering for sale milk that tested below the legal standard. A change of venue was taken by the defendants, and upon technical grounds the court decided that the state did not prove the offense as charged, and the defendants were dismissed.

MUSCATINE.

May 8th W. J. Ogilvie was tried before a jury for selling, or offering for sale, on the 25th of April, skim milk. The jury found defendant guilty and the court imposed a fine of \$25 and costs, amounting in all to \$46.60, which amount was paid by the defendant.

May 9th John M. Scott was tried and found guilty on a charge of selling milk testing below 3 per cent butter fat to the 100 pounds of milk. Defendant appealed the case to the district court. The defense was that the milk was sold from a can labeled "skim milk," but the evidence introduced was to the effect that the milk was sold at five cents per quart and not sold as skim milk. This case has been brought to a close by the defendant withdrawing his plea of "not guilty" and entering a plea of "guilty." J. M. Scott having discontinued the milk business the court dismissed the case after requiring said defendant to pay all costs.

CITY MILK INSPECTION.

The cities of Iowa in which the law requires milk inspection, and city milk agents are as follows:

Cities.	Milk agents.
Burlington.....	E. W. Edger.
Cedar Rapids.....	F. M. Brown.
Clinton.....	A. E. Rumble.
Council Bluffs.....	R. Fleming.
Davenport.....	Dr. A. W. Cantwell.
Des Moines.....	N. B. Rehkopf.
Dubuque.....	Dr. B. Micheal.
Keokuk.....	F. Harshman.
Muscatine.....	Emil Kranz.
Ottumwa.....	E. B. Hill.
Sioux City.....	F. M. McCray.

These agents have been reasonably active in the discharge of their duties. There were 4,819 individual tests made in the eleven cities of the state during the year ending October 31, 1895, in comparison with 3,984 tests for the previous year.

Complaints were made that all dealers did not take out permits and therefore their milk was not sampled and tested by the milk agents. We urged our agents to look into this matter, and the result was that for the year ending July 4, 1895, 132 more permits were issued in the eleven cities than for the previous year.

The milk agents have done all in the way of inspecting and reporting upon the cleanliness of wagons, milk depots, cans and utensils, the sanitary condition of dairies, etc., that could be expected when the small compensation allowed by law is considered together with the restriction under which they work. They are allowed \$3 for collecting samples of milk, testing and reporting the results of these tests, together with other information for this department. This fee pays for the work done in one day. The number of days that can be given to the work in all the cities by all the agents coming under the direct supervision of the department is 330. When this law was enacted it

required the agent to collect, but not to test, the samples, which were to be sent to the Dairy Commissioner. This last provision was found impracticable, and now each agent does his own testing.

It is impossible for the milk agents to look after the quality of the milk as shown by the Babcock test as carefully as the importance of the work demands. The improvement in the quality of milk of all the cities as shown by this test has not been very marked during the last year. The advance made one year ago in the quality as shown by the tests of the previous year was one-fifth of a pound of butter fat per 100 pounds of milk; this brought the average for the year ending November 1, 1894, up to 3.79 per cent, and this year the tables show the per cent to be 3.82, a very slight increase. While the improvement on the average in the quality of the milk has been small, there has been a decided change in the number of dealers whose milk fell below the lawful standard, 3 per cent of butter fat. The record on this point for last year by cities is for the six months ending October 31, 1894, and this year for the entire twelve months. Tests made from samples of milk taken from parties from whom permits are not required are not included in the following comparison. Such samples have in no case tested below standard. The comparison is as follows:

Cities.	Number tests below 3 per cent.	Number tests below 4 per cent.
Burlington, during 6 months, 1894.....	4; during 12 months, 1895.....	4
Cedar Rapids, during 6 months, 1894.....	3; during 12 months, 1895.....	3
Clinton, during 6 months, 1894.....	6; during 12 months, 1895.....	0
Council Bluffs, during 6 months, 1894.....	1; during 12 months, 1895.....	6
Davenport, during 6 months, 1894.....	0; during 12 months, 1895.....	0
Des Moines, during 6 months, 1894.....	13; during 12 months, 1895.....	28
Dubuque, during 6 months, 1894.....	4; during 12 months, 1895.....	0
Keokuk, during 6 months, 1894.....	0; during 12 months, 1895.....	0
Muscatine, during 6 months, 1894.....	5; during 12 months, 1895.....	7
Ottumwa, during 6 months, 1894.....	1; during 12 months, 1895.....	2
Sioux City, during 6 months, 1894.....	0; during 12 months, 1895.....	1
Total, for 6 months, 1894.....	37; total for 12 months, 1895.....	51

From this it will be seen that there were this year but 51 tests out of 4,633 that were below 3 per cent, and last year for six months there were 37 tests out of 1,764 tests, or in other words, last year there was a fraction over 2 per cent of the tests made, that fell below three pounds of butter fat to the 100 pounds of milk, and this year a fraction over 1 per cent.

In this comparison Des Moines does not show an improvement. This is accounted for by the fact that there are from two to six times as many dealers to be looked after as in other cities, and the additional time necessary to look after this large number of dealers, under the present system, cannot be given to the milk agent of this city.

This decrease in the number of tests below standard does not necessarily mean that fewer dealers watered or skimmed their milk the past year than the previous year, but rather that the dishonest dealer has become more perfect in the manipulation of his milk and does not permit his greed to reduce the butter fat in it below 3 per cent. He may nevertheless have skimmed some of the butter fat from or added water to the milk. We gave it as our opinion in last year's report that our law did not go far enough in defining the standard for milk, and that it should prescribe the minimum per cent of solids that standard milk should contain. Our observation and study during the past year has only changed this opinion into an absolute belief, and also convinced us that further improvements in the richness of the milk consumed in our large cities must be reached along this line. The remarks in the last report of this department on this subject were as follows: "The present law is good as far as it goes, but it stops short of accomplishing the desired result, namely: The furnishing of milk to the city consumer, the invalid, the infant and the child, that is not only unskimmed, but is also unadulterated. A milk dealer, under our present law, knowing that his milk is rich in butter fat—say four pounds per 100—can adulterate it 25 per cent and still have it test 3.20 pounds of butter fat to the 100 pounds of milk. Milk treated in this way is not skimmed, but adulterated; nothing has been removed, but the per cent of butter fat and other solids has been decreased by the addition of water or ice. Prof. J. A. Miller, Department chemist for the Department of Agriculture of the state of New York, has given this question careful attention and, in the department's report, 1894, vol. I, page 270, he writes as follows:

In order to secure some practical proofs that my deductions were not merely wild speculations, I undertook the dilution of several samples of average market milk and submitted them to a careful analysis. The results of the work, before and after dilution, are as follows:

SAMPLE NUMBER.	BEFORE DILUTION.			Per cent of water added.	AFTER DILUTION.		
	Per cent of butter.	Per cent of solids.	Per cent of fat.		Per cent of water.	Per cent of solids.	Per cent of fat.
671.....	26.81	13.19	3.63	39	29.34	10.66	3.01
672.....	27.60	12.40	3.45	10	28.89	11.11	4.04
673.....	29.73	12.27	4.35	29	28.33	10.67	3.51
648.....	27.70	12.30	3.79	3	28.80	11.11	3.48
674.....	27.67	12.33	3.79	10	28.90	11.19	3.27
669.....	27.10	12.81	3.90	15	28.99	11.07	3.27
202.....	26.45	13.54	4.31	20	29.34	10.99	3.27

From this table it can be easily seen to what extent dilution may take place as the results of actual experiments and not of logical deductions.

"On the subject of the composition of milk we quote from Bulletin No. 9, United States Department of Agriculture:

While the composition of samples of milk obtained from different cows and produced under different conditions may show wide variations, a fair average composition may be given as follows: Water, 87 per cent, and solids, 13 per cent. The solids include fat, 3.6; casein, 3.3; albumen, 0.7; milk sugar, 4.7, and ash, 0.7. The casein and albumen are the materials containing nitrogen, and are of special importance in cheese making. In general the ash, sugar and albumen are in solution, the casein in partial solution, and the fat in suspension, being mixed with the milk but not dissolved in it.

"A great many of the states have recognized the importance of the other solids in milk besides the fat, and have provided that standard milk must contain a certain per cent of solids. The following shows the milk standard for the several states as established by law:

MILK STANDARD.

STATES.	STANDARD FOR WHOLE MILK.				STANDARD FOR SKIMMED MILK.				
	Per cent of water not to exceed.	Per cent of total solids.	Per cent of solids other than fat.	Per cent of fat.	Sugr. at 60 deg. Fahrenheit.	Per cent of solids.	Per cent of cream by volume.	Per cent of fat by weight.	Sugr. at 60 deg. Fahrenheit.
Iowa.....	12.50	12.00	12	3	1.050 to 1.050	12	12	1.050	1.050
Maine.....	12.50	12.00	12	3	1.050 to 1.050	12	12	1.050	1.050
Massachusetts.....	12.50	12.00	12	3	1.050 to 1.050	12	12	1.050	1.050
Michigan.....	12.50	12.00	12	3	1.050 to 1.050	12	12	1.050	1.050
Minnesota.....	12.50	12.00	12	3	1.050 to 1.050	12	12	1.050	1.050
New Hampshire.....	12.50	12.00	12	3	1.050 to 1.050	12	12	1.050	1.050
New Jersey.....	12.50	12.00	12	3	1.050 to 1.050	12	12	1.050	1.050
New York.....	12.50	12.00	12	3	1.050 to 1.050	12	12	1.050	1.050
Ohio.....	12.50	12.00	12	3	1.050 to 1.050	12	12	1.050	1.050
Oregon.....	12.50	12.00	12	3	1.050 to 1.050	12	12	1.050	1.050
Pennsylvania.....	12.50	12.00	12	3	1.050 to 1.050	12	12	1.050	1.050
Vermont.....	12.50	12.00	12	3	1.050 to 1.050	12	12	1.050	1.050
Wisconsin.....	12.50	12.00	12	3	1.050 to 1.050	12	12	1.050	1.050

It will be seen that in no case do the total solids fall below 12 per cent, nor the fat below 3 per cent, and 88 per cent of water is the largest amount permitted. The Iowa law prohibits the adulteration of milk, but fixes no standard except the amount of butter fat it shall contain. In order to prevent adulteration and fraud of this kind our law, relative to the standard of milk, should be changed."

On the question of what the Iowa standard should be, investigations during the past year have led us to decide that 12½ per cent of total solids is the amount to be required. There is no doubt in our minds but that all well selected, well fed, and well cared for herds in Iowa can easily come up to this standard. In a number of states 13 per cent of total solids is the standard. This necessitates the milk containing not less than 3.5 per cent of butter fat at all times, and while this result should be attained in Iowa before many years, it may be that the time has not yet come. Give the authorities a chance to teach the adulterators a few wholesome lessons and we believe there will be but few, if any, samples of milk from city dealers that will fall below 3.5 per cent butter fat. After this has been demonstrated the time to raise the Iowa standard to 13 per cent total solids will have arrived.

CREAM STANDARD.

Our milk law should also establish a standard for commercial cream. Considerable complaint has been made that the quality of cream sold by some of the milk dealers is very poor, and in reality does not deserve the name under which it is sold. The same argument in favor of a milk standard will apply for a cream standard. The law should establish the minimum per cent of butter fat that cream must contain in order to be sold as cream. This should not be made too high, as a large amount of the cream sold in our cities comes from the previous night's milk, and has been raised in from eight to ten hours setting. Most of the milk that is sold during the day leaves the dairy early in the morning. Cream raised on milk that is kept longer than the time referred to is very liable to become sour soon after delivery, especially in the summer season.

MONTHLY MILK TESTS.

The following tables show the number of tests made monthly in each of the eleven cities for the last three years, and the average per cent of butter fat for each month for the same period. The last or recapitulation table shows the number of

individual tests made in the state and the average per cent of butter fat for each of the years ending October 31, 1893, 1894 and 1895, and the average per cent of butter fat for each city for the three years; also the total number of tests made for these years and the average per cent of butter fat for the total number of tests made.

BURLINGTON.

A comparison of total number of tests made by month and the average per cent of butter fat for each month for three years ending October 31, 1895.

MONTHS.	1893.		1894.		1895.	
	No. tests made.	Average fat.	No. tests made.	Average fat.	No. tests made.	Average fat.
November.....	30	4.94	34	3.81	44	3.62
December.....	48	3.91	61	3.95	35	3.61
January.....	32	3.37	35	3.79	38	3.79
February.....	65	3.39	48	3.74	26	3.75
March.....	62	3.61	57	4.05	47	3.68
April.....	43	3.70	29	3.53	27	3.74
May.....	53	3.33	47	3.76	57	3.65
June.....	51	4.07	.....	.....	32	3.84
July.....	37	3.97	38	3.61	58	3.74
August.....	38	4.07	45	3.73	.....	.....
September.....	46	3.61	35	3.74	31	3.55
October.....	42	3.53	24	3.22	28	4.20
Total and average.....	537	3.73	444	3.73	456	3.73

CEDAR RAPIDS.

November.....	66	3.73	37	4.94	30	3.84
December.....	71	3.91	43	4.12	.....	.....
January.....	15	3.94	14	3.94	30	3.77
February.....	.....	.....	70	3.96	19	4.00
March.....	30	3.78	18	4.12	23	3.80
April.....	19	3.68	30	4.03	.....	.....
May.....	60	3.90	.....	.....	.....	.....
June.....	65	3.60	37	3.84	23	3.61
July.....	30	3.75	60	3.90	102	3.82
August.....	29	3.78	55	3.95	.....	.....
September.....	48	3.82	.....	.....	.....	.....
October.....	31	4.08	49	4.04	43	4.13
Total and average.....	480	3.79	381	4.00	396	3.80

CLINTON.

MONTHS.	1893.		1894.		1895.	
	No. tests made.	Average test.	No. tests made.	Average test.	No. tests made.	Average test.
November.....	14	4.14	42	4.04	.....	.....
December.....	.....	.....	39	4.17	22	4.01
January.....	.....	.....	28	3.94	21	3.88
February.....	.....	.....	55	3.85	30	4.27
March.....	.....	.....	44	3.75	24	3.81
April.....	27	3.97	.....	.....	21	3.99
May.....	43	3.99	15	3.63	23	3.61
June.....	43	3.30	.....	.....	24	3.28
July.....	17	3.53	20	3.43	33	3.37
August.....	22	3.91	15	3.57	27	3.54
September.....	30	3.65	20	4.39	33	3.57
October.....	29	3.96	.....	.....	31	3.75
Total and average.....	235	3.71	271	3.88	309	3.71

COUNCIL BLUFFS.

November.....	14	3.82	38	3.92	15	3.69
December.....	22	3.54	40	3.99	45	3.61
January.....	49	3.44	55	3.37	30	2.54
February.....	43	3.44	19	3.73	22	3.32
March.....	36	3.49	53	3.96	64	3.53
April.....	75	3.52	14	3.47	67	3.50
May.....	49	3.49	14	3.35	61	3.33
June.....	50	3.39	.....	.....	22	3.54
July.....	40	3.45	15	3.65	74	3.74
August.....	13	3.90	31	3.62	34	3.82
September.....	51	3.61	15	3.72	31	3.77
October.....	37	3.65	47	3.80	23	3.50
Total and average.....	492	3.52	320	3.62	595	3.64

DAVENPORT.

November.....	41	4.04	49	3.64	15	3.61
December.....	59	3.82	39	3.64	14	3.25
January.....	.....	.....	55	3.28	14	3.68
February.....	28	3.91	23	3.37	29	3.96

DAVENPORT—CONTINUED.

MONTHS.	1893.		1894.		1895.	
	No. tests made.	Average test.	No. tests made.	Average test.	No. tests made.	Average test.
March.....	47	3.95	15	3.95	45	3.76
April.....	14	3.61	43	3.45	36	3.62
May.....	69	3.61	14	3.78	29	3.62
June.....	79	3.45	.....	.....	35	3.56
July.....	37	3.06	13	3.22	107	3.80
August.....	48	3.32	49	3.99	.....	.....
September.....	49	3.51	42	3.97	31	3.76
October.....	39	3.97	30	3.65	24	3.73
Total and average.....	601	3.65	327	3.66	264	3.58

DES MOINES.

November.....	14	4.03	24	3.43	53	3.69
December.....	10	3.80	19	3.91	72	3.65
January.....	67	3.46	85	3.57	69	3.90
February.....	36	3.30	44	3.12	78	3.67
March.....	37	3.44	21	3.73	90	3.56
April.....	56	3.50	75	3.53	89	3.90
May.....	130	3.32	48	4.12	113	3.78
June.....	61	3.69	68	3.90	91	3.65
July.....	64	3.66	68	4.21	118	3.70
August.....	21	3.51	69	4.32	89	3.71
September.....	73	3.55	72	4.20	81	3.84
October.....	.....	.....	83	3.49	92	3.73
Total and average.....	845	3.57	655	3.81	1,029	3.70

DUBUQUE.

November.....	18	3.30	31	3.45	15	3.69
December.....	29	3.34	50	3.72	23	3.83
January.....	39	3.38	45	3.49	20	4.14
February.....	12	3.43	16	3.94	23	3.30
March.....	50	3.63	42	3.33	47	3.71
April.....	24	3.58	30	3.28	48	4.02
May.....	31	3.26	37	3.34	46	4.25
June.....	15	3.09	22	3.35	47	3.85
July.....	39	3.35	21	3.06	22	4.09

DUBUQUE—CONTINUED.

MONTHS.	1893.		1894.		1895.	
	No. tests made.	Average test.	No. tests made.	Average test.	No. tests made.	Average test.
August.....	41	3.50	19	3.73	36	3.90
September.....	56	3.55	22	3.71	48	3.94
October.....	74	3.57	27	3.87	24	3.95
Total and average.....	475	3.55	258	3.81	409	3.90

KEOKUK.

November.....	14	4.14	50	4.31	12	4.32
December.....			22	4.90	33	4.57
January.....			21	4.00	37	4.35
February.....			32	4.19	24	4.50
March.....			32	4.43	21	4.73
April.....	10	3.46	12	4.17	33	4.86
May.....	52	3.56	20	4.17	33	4.70
June.....	38	3.60			23	4.09
July.....	33	3.03	24	3.84	27	4.09
August.....	66	3.44	35	4.19	34	4.08
September.....	13	3.41	24	4.24	23	4.15
October.....	30	3.85	35	4.34	16	4.45
Total and average.....	246	3.90	297	4.32	316	4.41

MUSCATINE.

November.....	9	4.42	23	3.73	24	3.92
December.....			26	3.81	35	4.04
January.....			44	3.72	12	4.02
February.....	16	3.49	49	3.65	37	4.06
March.....			67	3.79	51	3.90
April.....	15	3.75	18	3.79	26	3.52
May.....			38	3.75	38	3.93
June.....	9	3.70			35	3.74
July.....	9	3.56	31	3.76	64	3.87
August.....			38	4.04	38	4.13
September.....			16	3.77	37	3.91
October.....	25	3.30	34	3.90	38	3.80
Total and average.....	83	3.69	386	3.80	435	3.91

OTTUMWA.

MONTHS.	1893.		1894.		1895.	
	No. tests made.	Average test.	No. tests made.	Average test.	No. tests made.	Average test.
November.....	16	3.81	61	3.45	21	4.53
December.....					22	3.46
January.....			28	3.34	11	3.90
February.....			13	3.22	17	4.32
March.....	16	3.76	34	3.41	17	4.02
April.....	20	3.07	8	3.55	14	3.60
May.....	8	3.40			16	3.68
June.....	9	3.76	8	3.37	23	3.77
July.....			25	4.16	54	4.08
August.....					15	4.14
September.....			15	4.46	13	3.91
October.....	9	3.69	9	3.97	14	3.91
Total and average.....	78	3.87	193	3.67	237	3.93

SIOUX CITY.

November.....	37	3.97	38	3.35	27	3.81
December.....	28	3.89	23	3.67	28	3.70
January.....	37	3.65	34	3.54	27	3.76
February.....	23	3.93	25	3.61	35	3.73
March.....	37	3.75	33	3.77	40	3.64
April.....	23	3.72	24	3.62	41	3.44
May.....	39	3.57	39	3.67	43	3.63
June.....	25	3.83	24	3.53	38	3.65
July.....	23	3.64	29	3.69	111	3.86
August.....	12	3.88	29	3.70	43	3.70
September.....	25	3.53	29	3.73	39	3.60
October.....	15	3.45	28	3.88	29	3.61
Total and average.....	323	3.71	332	3.67	492	3.67

RECAPITULATION.

A comparison of total number of tests made in each city yearly, with average per cent of butter fat for each year, and average for the three years ending October 31, 1895.

CITIES.	1893.		1894.		1895.		Average for three years.
	No. tests made.	Average test.	No. tests made.	Average test.	No. tests made.	Average test.	
Burlington.....	327	3.73	444	3.75	426	3.73	3.74
Cedar Rapids.....	480	3.78	361	4.00	299	3.88	3.86
Clinton.....	235	3.71	371	3.88	309	3.71	3.77
Council Bluffs.....	498	3.53	330	3.62	506	3.64	3.60
Davenport.....	501	3.55	337	3.66	394	3.58	3.63
Des Moines.....	545	3.37	635	3.81	1,026	3.70	3.60
Dubuque.....	425	3.85	358	3.51	409	3.90	3.69
Keokuk.....	246	3.56	297	4.32	316	4.41	4.09
Muscatine.....	83	3.60	386	3.80	435	3.91	3.80
Ottumwa.....	75	3.82	163	3.67	237	3.85	3.63
Sioux City.....	325	3.71	332	3.67	492	3.67	3.68
Total and av'rg test for each year.....	3,935	3.59	3,984	3.79	4,849	3.63	
Average test for entire period.....							3.73
Total tests made in the eleven cities during the entire period.....							13,768

SHOULD THE SYSTEM OF MILK INSPECTION BE EXTENDED TO SMALLER CITIES?

In our last report we stated that it is a very grave question whether the state is doing right in confining the operation of the present milk inspection law to cities containing 10,000 or more people. In order to satisfy ourselves upon this matter we addressed a few questions to the mayor of each town having a presidential postoffice in this state. The answers indicate that the desire for milk inspection is not uniform, nor is the demand sufficient for recommending it for cities of less than 4,000 population. The cities of the state having 4,000 inhabitants or more, not including those in which milk inspection is in operation, are shown in the following list, with the population according to the new census, and the answer from their mayor to the question, "Is state milk inspection for your city desirable?"

Towns.	Population.	Want inspection.	No. of milk wagons.
Cedar Falls.....	4,506	Yes.	4
Centerville.....	5,554	No.	2
Charles City.....	4,201	Yes.	2
Boone.....	8,845	No.	5
Fairfield.....	4,026	Yes.	3
Fort Dodge.....	8,756	Yes.	6
Fort Madison.....	10,022	Yes.	8
Iowa City.....	7,526	Yes.	7
Independence.....	5,142	No.	3
Le Mars.....	5,046	Yes.	2
Marshalltown.....	10,059	Yes.	13
Mason City.....	6,627	Yes.	3
Red Oak.....	4,224	Yes.	3
Waterloo.....	8,490	Yes.	7
Webster City.....	5,035	No.	1

Our judgment is that a careful investigation would disclose that more dealers are selling from wagons in these cities than were reported, and that in places where one or two are reported

there are a great many hand dealers who carry milk to their customers. Reducing the size of the city that can have milk inspection, to 4,000, will add fifteen to the present list. Of this number four answered that they did not desire inspection, and eleven would like the benefits from it.

The amount allowed by law for the expense of milk inspection is altogether too small. No one can accomplish the best of results under the present law, which limits the number of tests in the eleven cities to 330 per year, at a cost of \$890. This sum is ridiculously small for the amount of work that should be done. When the present law was enacted it was in the nature of an experiment, and was all right as such, but now that time and experience has demonstrated the importance of the work, the citizens of our cities should be given the best possible results that can be obtained, and at the same time with as small an outlay of the state's money as careful and judicious management will permit. Under our present system these smaller cities, fifteen in number, could be added at a cost of about \$1,500, or an average of \$100 for each of the cities. If the present system of milk testing is retained, it will cost about \$300 per month, or \$3,600 for the larger cities. These figures are based upon the theory that the milk from all dealers should be tested at least three times per month, and that an agent with a horse and buggy can collect and test from twelve to fifteen samples each day. The law allows him \$3 for this service, which is a small compensation and should be increased at least to \$4. We do not think satisfactory results can be obtained by a less number of samples than the number proposed above, per month. The following table gives the number of people who live in the cities where our present milk testing law is in operation, and the extent of this branch of the dairy business in dollars and cents, confined to dealers having permits. All milk and cream delivered and used other than by these dealers is not considered in this statement:

CITIES.	Population.	PERMITS ISSUED— Y R END'G JULY 1, '96		SOURCE OF MILK SUPPLY AND HOW OBTAINED.				No. of persons em- ployed.	NO. OF FAMILIES AND PUBLIC HOUSES RECEIV- ING MILK.		Amount received for milk during the year.	Veady average per cow.
		Wagons. Depots. Total.	Oven herd. Own herd and buy.	Buy all.	No. of cows.	Families.	Public, res- taurants, hotels, etc.					
Burlington.....	35,946	17	3	30	6	630	50	3,234	15	\$ 82,239 00	881.50	
Cedar Rapids.....	21,555	34	6	40	5	69	67	3,123	33	95,434.00	81.43	
Clifton.....	17,275	31	2	33	1	46	32	2,620	36	25,744.00	71.00	
Council Bluffs.....	30,190	23	2	25	1	38	3	1,769	45	44,203.00	65.00	
Davenport.....	30,019	24	5	29	5	518	130	4,705	53	75,600.00	83.35	
Des Moines.....	25,336	25	3	28	10	50	12	1,723	130	121,824.00	93.35	
Dubuque.....	40,774	25	3	28	1	1	8	946	66	73,876.00	73.65	
Keokuk.....	14,287	16	15	31	1	21	35	1,797	66	34,420.00	104.11	
Muscatine.....	12,257	15	1	16	15	290	33	1,141	18	22,246.00	89.50	
Osborne.....	16,231	16	16	32	4	370	48	1,870	31	35,700.00	65.89	
Sioux City.....	27,371	33	6	39	34	4	629	76	3,033	31	55,150.00	58.00
Total.....	291,664	308	70	378	59	86	7,113	874	35,272	330	\$67,736.00	\$89.43

From this table it will be seen that about 300,000 people live in the eleven cities, and fully 50 per cent of them are dependent upon milk wagons or depots for their supply of milk and cream. In the fifteen cities that we advocate adding to the list there are about 50,000 more people dependent upon the same source which would make in round numbers about 200,000 people who get their supply of milk from dealers who would come under the control of the city milk inspection law. Beyond any question these citizens are entitled to pure, clean, and rich milk, and it is the duty of the milk dealer and producer to furnish them with such an article. It has been necessary in the past, and will be in the future, for the police power of the state to see that this obligation on the part of the milkmen is performed. Would it not be fair and right that the milk producer and dealer pay the expense which the state incurs in order that the people may be protected and receive fair treatment at their hands? Under the present law \$1 is charged for each permit issued; this permit is simply intended to locate the dealer so that the milk agent can find him and procure samples of his milk for testing. It is our judgment that the milk producer and the milk dealer should both be licensed so as to raise sufficient funds to pay the entire expense incurred by this department in connection with city milk inspection.

It is reasonable to believe that the people who patronize these dealers would be perfectly willing to pay a fraction of a cent more per quart for their milk in order to assist in the payment of the license fee which would in turn result in compelling the dealer to furnish them milk, rich in quality, clean and

pure in flavor, and free from all the disease-producing germs. We further believe that the importance and responsibilities of producing and furnishing proper milk for the feeding of infants, nourishing of invalids, and for the general use of the people of our cities and towns, are so great that a license of reasonable size would have the effect to weed out the irresponsible producer and dealer and leave the market for those continuing in the business twelve months in the year, who are willing to provide themselves with suitable wagons and utensils to take care of the milk at all seasons of the year, as well as to care for their cows and feed them in a proper manner, and if instructed and educated in the knowledge and regulations necessary for perfect sanitation, would cheerfully comply with all such rules and regulations established by law or by this department, for the protection and safety of all consumers of milk and cream.

Proper regulation on the subject of milk sanitation is for the direct benefit of the milk producer and dealer, as there are, without doubt, many persons who do not use milk freely at the present time on account of the fear of contracting consumption or some other contagious disease.

OTTUMWA INVESTIGATIONS.

We became convinced soon after taking charge of this department that the system of testing milk for butter fat stopped far short of giving us the evidence to enforce the law prohibiting the sale of unclean, impure, unhealthy or unwholesome milk, and in order to determine before making any recommendations what changes were necessary, this department concluded to investigate by inspecting some of the city milk supplying dairies. A list of questions was prepared with the intention of selecting one of the most thorough and competent milk agents, and employ a competent veterinarian to assist him in making a few inspections. The questions were as follows:

1. Name of owner, location, and postoffice address.
2. Number of the state permit issued by this department.
3. Number of cows in the herd.
4. Average number of gallons of milk produced per day.
5. Is the milk retailed by owner? If not, by whom?
6. Number of cows in first class condition.
7. If any are not in first class condition, describe ailment and cause of condition of each case.

8. If symptoms of tuberculosis are discovered, state full particulars, and send to this office a sample of milk from each part of the udder of such animal.
9. Kind of feed used.
10. Water supply; condition, how obtained, pure or impure. If the latter, state cause (important)?
11. Condition of stables or sheds; ventilation, cleanliness, drainage; are animals crowded?
12. Condition of cow yard; any stagnant water or manure piles in yard?
13. Where is milking done?
14. How is milk strained and taken care of?
15. Condition of all cans and utensils; manner of cleaning.
16. General remarks.

About the time this plan was decided upon, startling developments occurred in the city of Ottumwa, causing investigations by this department which consumed all the time that the executive force of this office could spare from other duties.

THE OTTUMWA CASES.

While at Ottumwa in the discharge of his regular duties the Commissioner's attention was called to a sample of milk that Milk Agent E. B. Hill had collected, and thought suspicious, wherefore he took it to Dr. L. J. Baker, physician to the city board of health, for examination. This sample was divided by the doctor, and part of it given by the Commissioner to J. Christian Bay, bacteriologist of the state board of health, for microscopical examination.

Before being delivered to Professor Bay, this sample was placed in a Babcock centrifugal machine and whirled at a high rate of speed for several minutes. Professor Bay's report is as follows:

REPORT NO. 1.

IOWA STATE BOARD OF HEALTH,
DEPARTMENT OF BACTERIOLOGY,
J. CHRISTIAN BAY, Bacteriologist of the Board.

DES MOINES, Iowa, July 1, 1895.

To the State Dairy Commissioner:

The sample of milk marked "Ott," which was submitted for examination June 28th, and forwarded by you to this office, contained numerous pus corpuscles, pus coagul, and the *Bacillus tuberculosis* in moderate numbers.

Very respectfully,

(Signed)

J. CHRISTIAN BAY.

On the same day that the sample was given to Professor Bay he informed us of the result of his examination, and the following communication was forwarded to the milk agent at Ottumwa:

DES MOINES, Iowa, June 28, 1895.

E. B. Hill, Ottumwa, Iowa:

DEAR SIR—I have just wired you as follows: "Sample from Dr. Baker contains pus, tubercle bacilli. Prohibit dealer from selling. Forward samples from each cow of herd immediately. Letter to-night." The milk was put through the centrifugal machine and the bottom given to Prof. J. Christian Bay, who informs me that he had discovered pus and tubercle bacilli, the latter as plain as he had ever discovered it in any milk. In fact it agrees with the sample taken from the Waterloo herd where the animals were afterwards killed and found largely affected. The professor is to make me a report in full of his findings, a copy of which will be sent to you. You should not delay in having this milk declared unwholesome, and in giving notice to the parties that they must not sell any milk until the animals giving infected milk can be determined and then separated from the balance of the herd. This is the reason that I request you to get samples from each cow. Have the samples so marked or numbered that no mistake can be made as to the cow each sample represents. The milk will then be tested here, and the result made known to you.

You may show this letter, and the report which you will receive later, to Dr. Baker. It may be that the health department can have this herd tested for tuberculosis. Let me know what he has to say in this connection. Respectfully,

(Signed) W. K. BOARDMAN,
State Dairy Commissioner.

In compliance with this order twenty-two samples were sent to this office, each taken direct from an individual cow, numbered and marked so that the marks corresponded with a definitely described animal. These samples were taken in new bottles, which were thoroughly scalded before being used. After receiving them, and before delivering to Professor Bay, they were placed in the Babcock machine. The following is Professor Bay's report on these samples:

REPORT NO. 2.

STATE BOARD OF HEALTH,
DEPARTMENT OF BACTERIOLOGY,
J. CHRISTIAN BAY, Bacteriologist of the Board. }

DES MOINES, Iowa, July 2, 1895.

To the State Dairy Commissioner:

DEAR SIR—I am in receipt of twenty-two samples of milk, which have been submitted to a bacteriological examination for tubercle bacilli at your request. I respectfully report as follows:

Sample No. 1 contains the *Bacillus tuberculosis*. Samples Nos. 3, 4, 6, 7 and 10 contain both pus and the *Bacillus tuberculosis* in varying proportions. I am, very respectfully,

(Signed) J. CHRISTIAN BAY.

Mr. Hill informed us that there was some question as to whether the first sample, which was a composite sample, had come from the herd of twenty-two cows whose milk was reported in Professor Bay's second report. Upon receipt of this information Mr. Hill was ordered to follow the matter up, and make sure that he had obtained a sample from all the cows that could have possibly furnished any of the milk from which the first composite sample was taken. In response to this order twenty-four samples from one herd, thirty-nine from another, and twenty-six from a third were received. These were all taken with the same care, and treated in the same manner as the others. Of these samples Professor Bay reported four out of the twenty-four, three of the thirty-nine, and four of the twenty-six, infected with the *Bacillus tuberculosis*, and that two of the twenty-six lot contained pus.

This investigation at Ottumwa caused considerable criticism of this department by the press. We therefore print for the first time the following letter of instruction, which was sent to Milk Agent E. B. Hill at that time:

DES MOINES, IOWA, July 2, 1895.

E. B. Hill, Ottumwa, Iowa:

DEAR SIR—I have just received a verbal report from Professor Bay, to the effect that the milk samples forwarded from you numbering from one to twenty-two inclusive, and being milked from different cows from the herd of Mr. Michaels, shows the following result: Numbers 1, 3, 4, 6, 7 and 10 all contain tuberculous germs, and all except No. 1 contain pus. The balance of the samples are reported to be free from any germs or pus. This is surely a very bad state of affairs, and milk must not be sold coming from the cows corresponding with these numbers that are reported affected. A copy of Professor Bay's report will be forwarded to you as soon as received by this department. You should suggest to the owner of these cows that the ones corresponding with these numbers should be placed somewhere by themselves and, no doubt, should be made subject to tuberculin tests. It also may be true that others of this herd may be affected, but the germs not discovered in the milk.

The dairyman must not sell milk from this herd unless the infected animals are separated from the others, and the yards and barns where the herd is kept, thoroughly disinfected. You must report this matter to Dr. Baker at once, so that the board of health may take such precautionary measures as they may see fit.

I want you to give me a full description of the cows corresponding with the numbers above; their age, breed, and any other particulars connected with them. Examine the udders and milk veins carefully, see if anything unusual can be discovered or located, and find out if possible where Mr. Michaels obtained these cows.

I shall write to Mr. Michaels as soon as a full report is received.

Respectfully, (Signed) W. K. BOARDMAN,
Iowa State Dairy Commissioner.

Agent Hill complied with our request and reported on the twenty-two cows that furnished the samples of milk reported on in Professor Bay's report No. 2.

MILK AGENT HILL'S REPORT.

OTTUMWA, Iowa, July 4, 1895.

W. K. Boardman, Des Moines, Iowa:

DEAR SIR—Your telegram received. Will obtain samples as soon as I can. I was out to Mr. Michaels' last evening and examined the six cows infected with tubercle bacilli. Cow No. 1 is grade Holstein, 10 years old, in good fair flesh and apparently in good health; udder and milk veins in a normal condition; could not discover any appearance of fever. The cow has been milked some time since being fresh, and does not give milk enough to distend either udder or veins. This is the case with all examined. I did discover in this cow on the inner side of the front teat, an indication of a small lump, but manipulation dissipated it. I also discovered this when I took samples. Mr. Michaels has owned the cow five years. Number 3 cow is common stock, 9 years old, in fair condition. He has owned her several years; all of the cows affected he has owned from three to five years, and I did not think it necessary to get the date or who he bought from. I did not discover anything wrong with the udders of any other of the cows, and they all seemed to be in good health, and in fair condition of flesh. Number 4 cow is 8 years old, a grade Holstein. Number 6, 9 years old, common stock. Number 7, 7 years old, of common stock. Number 10, 9 years old, three-quarters Shorthorn stock.

These cows have been kept constantly in one part of owner's barn for the last five years. Four years ago last February he had a cow in the same end of the barn die of what appeared to them consumption, but they knew nothing of the nature or in fact the disease, and paid no attention to it. A year later the cow that stood by her side died in a similar way, but since then they have not lost any; but every one of the cows now pronounced infected with tuberculosis have stood ever since in the same row, and all the other cows in the barn are free.

This is the history of the cows. The sanitary committee of the board of health will take measures to have this and all other dairies thoroughly disinfected at once. Dr. Baker wished me to say this to you; also that concerted action was being taken to have all the herds of the city dairies tested by the tuberculin test under the direction of an expert. All the dairymen are alive to the importance of this, and are as anxious as any one that none but pure milk shall be sold.

Respectfully,
(Signed)

E. B. HILL.

The party owning this herd visited Des Moines on other business, and on July 10th we had an interview with him which brought out the same facts reported by Mr. Hill. On the same day, after having this interview, we laid the matter before the executive council, along with other examinations that Professor Bay had completed up to that time. They approved of the investigations and ordered us to continue them at such

places as we thought best. The investigations were taken up with renewed vigor, and the agents in all the cities under our jurisdiction were set at work. Instructions were sent them to first procure a sample of milk from each wagon and depot. They were required to get new bottles and corks that had never been used, to scald them with pure boiling water, and after having filled them, to seal and mark each sample carefully and forward by express to this office. As soon as the samples were examined and the bacillus tuberculosis was found, the agent was ordered to follow the matter to the herd or herds producing the milk, and take a sample from each individual cow in the herd. These samples were all treated in the same manner as previous samples and delivered to Professor Bay for his examination. He made twenty-eight written reports to this office and had a large number of samples on hand for examination when ordered by this department to stop the investigations. On August 10th the following summary of the work done and results reported was made:

SUMMARY.

On July 10, 1895, I made a verbal report to the executive council regarding special work connected with my department. Previous to that report, samples of milk had been received from the state milk agent at Ottumwa and placed in the hands of Prof. J. Christian Bay, bacteriologist of the state board of health, to be microscopically examined by him to discover any disease germs, and especially the bacillus tuberculosis, if existing. Reports had been received from Professor Bay to the effect that some of the samples of milk as sold from wagons, furnished by this department, and also milk from individual cows comprising a herd in Ottumwa, contained tubercle bacillus and pus. These facts were reported to the executive council and a statement made that the services of J. Christian Bay, bacteriologist of the state board of health, could be secured for a very reasonable compensation. The executive council approved of this special work and instructed me to continue the investigation.

The following is a summary of this special work for the month:

Number of samples of milk received and delivered to Professor Bay, taken from cans as it was being sold.....	729
Number of samples taken from dairymen's individual cows.....	319
Total number of samples received and delivered to Professor Bay....	1,039

the owner was such as would have warranted the proper authorities in doing this. As the matter now stands, this department cannot pass upon the correctness of the result of the work of either party, and is wholly at loss to offer an explanation for such different results. Early before any controversy had arisen upon this subject we expressed our confidence in the tuberculin test. It has been with much interest and satisfaction that we have studied the reports of experiments made with tuberculin and read many of the bulletins and articles appearing in the agricultural, dairy and scientific publications of this and other countries. We came to the conclusion that the tuberculin test in the hands of competent operators is as certain in its results as anything of this kind can possibly be. We believe that errors will occasionally occur, but they will be so few that for practical purposes we need not hesitate to adopt the tuberculin test as reliable. We have also noticed in investigations as to the reliability of the tuberculin test, that the microscope as well as the post mortem examination has been used as a witness to its accuracy. We have been told by such microscopists as it has been our good fortune to meet since this controversy began, that while the finding of the bacillus tuberculosis in milk may be a tedious undertaking on account of the small amount of milk that can be examined at one time, nevertheless satisfactory results are obtained. It may be necessary to examine several specimens from the same sample in order to be reasonably certain that it is or is not infected, and it is also necessary, in cases where no infection is found, to make more than one examination before deciding positively that the animal furnishing the milk is free from disease. It is an established fact that milk from the same cow is not constant, differing one day with another; therefore milk from a diseased cow might be found free at times from these germs. Nevertheless, when the tuberculosis germ is discovered there is no necessity or liability of mistaking it for anything else. Men well up in this kind of work tell us that they cannot be mistaken in this regard. The use of the microscope along this line is not without its advocates among the veterinarians of the country.

Dr. W. L. Zuill, chairman of the veterinary faculty of the University of Pennsylvania, expresses himself upon this subject: "Would it not be more reasonable, more logical, more in accord with the dictates of common sense to first examine that

product microscopically and chemically, and thereby prove that it is unfit for food and dangerous to human lives? Such an examination can be made with less loss of time, with more certainty and less expense, and, when made, having more definite and fixed value than any test to which the animal could be subjected."

Our opinion has been and still is that the microscopical and bacteriological examinations are useful to locate the trouble, and where the disease is discovered the tuberculin test should be applied. We think these two methods should be used together, and form the important feature in our system of dairy inspection. We have never for a moment considered that our authority gave us any right to enforce the use of the tuberculin test.

The first letter of instruction we sent Milk Agent E. B. Hill was on July 2, 1895, a copy of which has been reproduced in this article. In this letter our position regarding infected cow is fully defined, requiring in all cases, if the milk is to be sold, that the infected animals of the herd must be separated from the healthy cows. This department has no power to compel this to be done, but has authority to see that none but healthy milk is sold, and in accomplishing this the separation of the infected cows from the healthy is absolutely necessary. This is not quarantine; the tuberculous cows can come in contact with all the other cattle on the farm as long as the cows furnishing the supply of milk to be sold have no chance of coming in contact with them.

This department began this investigation fully knowing that the power to order the tuberculin test was not ours, also clearly understanding that the microscopical examination of milk was not to be solely relied upon to determine the presence or absence of tuberculosis in the cows producing it. We believed then, and do now, that when the microscope discovers the bacillus tuberculosis in milk it is there, and if the milk has been carefully drawn from the cow and placed in a vessel properly prepared to receive it, and all necessary pains taken to keep the milk free from all sources of infection, then we believe the cow producing the milk is infected with tuberculosis. We expressed ourselves quite fully upon this question in our letter to Dr. Baker on July 20th:

DES MOINES, Iowa, July 20, 1895.

Dr. J. L. Baker, Ottumwa, Iowa:

DEAR SIR—I expect that Milk Agent Hill has informed you of the result of the work done in connection with the dairy herds of your city. I judge from some things that have appeared in the press, and otherwise, that there is a mistaken idea as to the real object and the result to be obtained from this investigation. What I have reference to is that an idea is prevalent that this test will determine the true condition of individual cows in a herd as regards the existence of tuberculosis in each animal. This is not my understanding of the examination. From all that I can learn I am satisfied that the milk from infected cows, upon examination at certain times, may show, and will show, the germ, whereas at other times the germs may not, and probably cannot, be discovered. If this misunderstanding exists and is not corrected it might cause trouble and confusion. I do not consider that we are examining the cow, but the milk, as you no doubt well know milk might come from a cow and be free from infection, and the germ, by careless methods of milking or infected atmosphere, might be communicated to the milk. It should be understood that this examination is simply a preliminary that is to give us an idea where this disease exists, and after knowing that it is in a community or herd, other and more effective and conclusive remedies must be applied, if all the animals having the disease be located.

I do not intend that any dairyman shall understand that if samples are sent here and found not to contain the disease germ he is to consider and rely upon the test establishing the fact that his herd, so testing, is free from tuberculosis. But on the other hand, if samples of milk from certain cows are discovered at any time to contain these germs, and at other times the germs are not discovered, we must insist that the cow is infected, unless it can be shown that the germs came from outside of the animal.

The extent of this trouble at Ottumwa is far greater than I had any conception of, and as you are well aware, the animals themselves must be dealt with through the board of health or the veterinary department.

Yours very respectfully,
(Signed)

W. K. BOARDMAN,
Iowa State Dairy Commissioner.

ARTICLE BY PROF. J. CHRISTIAN BAY.

This department invited Professor Bay to prepare an article upon the subject under discussion. His experience and thorough study adds much to the value of his conclusions and weight to his opinion. His connection with this department, and the part he took in these investigations were entirely un solicited on his part. He promptly granted all our requests, and did his work willingly and with a conscientious desire to arrive at the facts. He is a hard worker, a close student, thorough in his methods and honest in his conclusions. It is with much pleasure that we give space to his views as stated in the following article.

TUBERCULOUS INFECTIOUSNESS OF MILK

BY J. CHRISTIAN BAY, BACTERIOLOGIST, STATE BOARD OF HEALTH

For several years progressive sanitarians and hygienists have been aware of the danger of contamination from tuberculous cattle and other animals through meat and milk. On many occasions it has been advised that no milk should be used in the household, except when boiled, or when any and all organisms contained therein have been destroyed. It has been demonstrated by many investigators that a great number of organisms will live and thrive in milk, and communicate contagious and infectious diseases from one place to another, or from animal to man. Thus, typhoid fever has been known to be propagated by milk supplies, but the far worse infection conveyed by milk originates with the cow, and consists in the transmission of the causative agent of consumption, the *Bacillus tuberculosis*, and its destructive products. As milk is one of the most

important gross elements of nutrition in every day life and during periods of disease, and used in one form or another by nearly every one, from infancy to old age, the fact that it may communicate to consumers one of the most dreaded diseases certainly is very distressing.

The assertion of Dr. R. G. Freeman¹, that "milk as usually marketed is very dirty" doubtless is true to some extent, although the cited expression is somewhat pointed. Still there is no doubt that milk is exceedingly carelessly treated, and to an unnecessarily great extent exposed to contamination of different kinds. Thus there is abundant reason for advocating and carrying into effect the use of processes by which bacteria may be destroyed before the milk is distributed among consumers, or used in the dairy. The most effective among these processes is *boiling*, but as the milk is thereby generally altered in such a manner that its taste becomes effected, *sterilization*, that is, heating in a closed vessel, and subsequently cooling without admittance of the air, or while only pure (filtered) air is allowed to be absorbed by the milk, has been adopted.

As regards the manner in which cows become affected by tuberculosis, it should be mentioned how anachronistic it is that these animals which are used so universally and completely for human food should be cared for and fed less carefully than other domesticated animals of less or little importance along those lines. It is difficult to understand why a dairy herd should not be cared for and given as hygienic surroundings as our horses. Still, most herds are kept in more or less open, yet dark barns, in filthy stables, never carefully cleaned, and receive careless, or at all rates injudicious treatment. It is equally anachronistic that cattle and swine, which are far more susceptible to disease than other domesticated animals, should be fed on waste matter of different kinds, carelessly handled and never subject to inspection by competent authorities.

These circumstances reveal some of the causes of the spread of consumption among cattle. Most of the conditions which are unfavorable to the health of cattle and other animals, are exceedingly favorable to the life, development, and propagation of many disease-producing bacteria, such as the *tubercle bacillus*. The latter will develop abundantly in dark, moist stables, and preserve its vitality among scattered fragments of dry straw, dust particles, and excrementitious matter.

Consumptive persons are often attending the cows. They may very easily convey the disease from themselves to the animals by spitting on the floor, or near the mangers, by touching carelessly the cattle, or their food, and by many other means. As tuberculosis is now considered—this implies that it always was—both contagious and infectious, we may easily form an idea of the very numerous ways in which one cow may contaminate others with which it associates, and, indeed, the spread of the disease is such as to demonstrate that if one cow in a herd contracts the disease, many among the rest, if not all of them, are likely to receive the contagion. Consequently tuberculous infection may be propagated from cattle to man, and from man back to the animals in many ways, and it is evident that we can entertain no justified hope of eradicating the disease, as long as there is one case of tuberculosis to be found, and as long as the general public is rather ignorant of hygiene.

We may be interested in knowing something about the extent of infection in the different countries. An idea of the prevalence of bovine tuberculosis in Germany may be found by studying a number of data recently published by Gutmann. In 1891 this veterinarian made tuberculin injections upon 1,058 head, of which 738, or 69.7 per cent reacted. In the course of the following three years, 98 head were similarly tested; of these, 26, or 28 per cent gave reaction. Thereupon all the cattle were killed, and careful post mortems held. The result showed that among the 67 head which did not react to the test, 2 were found having large tuberculous caverns and other lesions of a tuberculous nature in their lungs. Of the 26 which did react 1 showed no sign of tuberculosis.

Of 132,294 head examined at the slaughter houses at Copenhagen, from 1891 to 1893, 23,305, or 17.7 per cent were tuberculous. It must be remembered, however, that the determinations were made by means of the naked eye; neither tuberculin nor the microscope was used. Of 8,292 swine examined during the same period, 1,272, or 15.3 per cent were found to be infected.

In 1892, 142,874 head of cattle, and 518,078 swine examined similarly at Berlin gave respectively 15.3 and 1.55 per cent tuberculous individuals.

The spread of bovine tuberculosis in our own country is yet indefinitely known. From 5 to 98 per cent in herds have been found to be infected, and, indeed, many are entirely free from

infection. It has been estimated that in certain rural districts about 15 per cent of the cattle are tuberculous, while in cities and towns from 25 to 75 per cent may show infection.

A very interesting supplement to the above statistics, showing result of a physical examination of the meat as compared with that of the tuberculin test is furnished by Bang² of Denmark. Bang tested 1,170 herds, containing 80,167 head of cattle with tuberculosis. The results were as follows:

(1) 93 herds containing 10,408 individuals: 59.6 per cent infected.

(2) 1,077 herds containing 20,214 individuals: 33.1 per cent infected.

The 93 herds were large, that is, each of them contained fifty or more head; the others were small herds.

Of the large herds, about two-thirds showed an infection of over 50 per cent, and one-fourth were over 75 per cent.

Of the small herds, more than one-half showed an infection of below 25 per cent, while only about one-tenth had 75 per cent.

The physical examination of cattle from all parts of the country revealed only 17.7 per cent of cases. Had a more exact test been applied, it might have revealed over 20 per cent more cases. This fully demonstrates that the physical examination of carcasses is altogether insufficient; it arrests probably one-half of all the tuberculous bodies, preventing them from being marketed. The other half is never discovered, but is left free to enter the market as wholesome and pure food.

The two tables appended below are self explaining. They are results of Bang's investigations, and show the relative distribution of the disease in large and small herds, and in old and young individuals.

I.

HERDS.	HEADS INFECTED.				All healthy.
	Below 25 per cent.	25 to 40 per cent.	50 to 75 per cent.	75 to 100 per cent.	
LARGE.....	31	10	30	33	3
SMALL.....	582	203	186	101	202

II.

CATTLE.	UNDER SIX MONTHS.		ABOUT ONE YEAR.		ABOUT TWO YEARS.		OLDER.	
	Healthy.	Diseased.	Healthy.	Diseased.	Healthy.	Diseased.	Healthy.	Diseased.
Numbers.....	5,793	1,977	6,837	2,972	4,638	3,225	10,833	11,129
Percentage.....	84.3	15.7	69.7	30.3	59.4	40.6	49.3	50.7

THE INFECTION OF MILK.

It appears that although a number of old authors have on record¹ a number of facts tending to show that milk has introduced into the human body the disease which we now name tuberculosis, or consumption, the subject has received closer attention only for a period of about fifty years. Dr. Klenke², of Leipzig, first called to mind the prevalence of scrofula and other³ tuberculous diseases, and their spread by the use of raw milk for infant food. Since then numerous studies have been made along this line, and we are now well aware that commercial, as well as dairy milk, does often contain larger or smaller numbers of tubercle bacilli, which, when once introduced into the human system, may give rise to infection.

One of the men who have devoted considerable attention to this question—namely, Dr. Schroeder⁴, of the United States Bureau of Animal Industry, reports that out of nineteen specimens of milk obtained from the general milk supply of Washington, one contained the bacillus of tuberculosis in numbers sufficient to give rise to infection, and that the milk from one of twelve tuberculous cows—an animal practically in the stage of generalized tuberculosis—was decidedly tuberculous. Dr. Schroeder concludes his report by expressing the opinion that now and then the presumably mixed milk of dairies may contain enough tubercle bacilli to infect the animal system.

Another investigator, Prof. O. Bollinger, of Munich, has thrown a great deal of light upon the artificial production of tuberculosis as induced by the consumption of diseased milk. He holds that the milk of such animals is especially contagious and reproduces the disease in certain animals from that point of view. He also proved that such milk, even when boiled, still retains its injurious properties.

In this connection it might be mentioned that the toxin produced by the tubercle bacillus has been isolated by Zuelzer, who found that the injection of one centigram or less of this

substance subcutaneously in rabbits and guinea pigs causes after three to five minutes increased frequency of respiration (to about 180 per minute), and an elevation of temperature of about one-half degree. From two to three centigrams kills rabbits in two or four days.

The question whether or not the bacterial poison is killed by the temperatures under which the tubercle bacilli are killed is yet open. It is, however, probable that the poison is not rendered immune by ordinary milk sterilization. It being true that the toxin cannot produce tuberculosis of which the tubercle bacillus is alone capable, the toxin produces, however, such an effect upon living organisms that the latter become quite predisposed to tuberculosis.

I also call attention to the work of Dr. Ernst⁴, of Boston, carried out under the auspices of the Massachusetts society for the promotion of agriculture. A large number of statements have been collected from authorities in the state, and there have been made large numbers of bacteriological milk analyses, which all led to the conclusion that—

First.—Milk from cows affected by tuberculosis in any part of the body may contain the bacilli.

Second.—There must not necessarily be a lesion of the udder before the milk can be contaminated.

Thus the udders may be perfectly healthy and yet the milk drawn therefrom may contain the bacillus of tuberculosis.

This latter fact is now universally accepted and tends to explain a number of disease records of which a few should be mentioned.

In the practice of Dr. Stang of Amorback, a well developed five-year-old boy, from sound parents, whose ancestors on both male and female sides were free from hereditary taint, succumbed after a few weeks' illness with acute miliary tuberculosis of the lungs and enormously enlarged mesenteric glands. A short time before the parents had their family cow killed, and found her the victim of advanced pulmonary tuberculosis. (Lydtin.)

Dr. Demme records the case of four infants in the Childs Hospital at Berne, the issue of sound parents, without any tuberculous ancestry, that died of intestinal and mesenteric tuberculosis, as the result of feeding on the unsterilized milk of tuberculous cows. These were the only cases in which he was able to exclude the possibility of other causes for the

disease, but in these he was satisfied that the milk was alone to blame.

After a lecture of the author's at Providence, R. I., a gentleman of North Hadley, Mass., a graduate of the Massachusetts Agricultural College, publicly stated that his only child, a strong, vigorous boy of one and one-half years, went to an uncle's for one week and drank the milk of a cow which was shortly after condemned and killed in a state of generalized tuberculosis. In six weeks the child was noticeably falling off, and in three months he died, a mere skeleton, with tuberculosis of the abdomen. The father could trace no tuberculosis among his near ancestors, but the mother's father and uncle had both died of it. She remains in excellent health.

Dr. E. O. Shakespeare (*Med. News*, March 26, 1892), attributes one-fifth of all deaths in infants and young children feeding on milk to tuberculosis, usually commencing in some part of the digestive organs.

Regarding the means of discovering the presence of tuberculosis in animals no doubt the tuberculin test is the best known. More will be said about this question at the close of this paper.

EXPERIMENTAL WORK.

During the years of 1894 and 1895 I often had occasion to examine human and animal excreta, or secreta with regard to possible infection by the tubercle bacillus.

In the spring of 1894 the board received intelligence of an Iowa dairy herd suspected of harboring the disease. During the winter before the farmer observed that his cattle were suffering from swellings at different parts of their bodies; four or five died, and some were very sick, and remained so for as long a time as they remained in the stable, until they were turned into the fields. Here the majority of them recovered, and only a few of them remained sick and died. A village surgeon attended to the herd, but as he was uncertain as to diagnosing the disease, the farmer applied to the state veterinary surgeon, who turned the matter into my hands, as he thought the disease could be but tuberculosis. I wrote to the farmer and stated that so far as I could judge from what I heard about the condition of the cattle, the disease was tuberculosis. The symptoms were local swellings, general debility, copious discharge of spit, discharge of pus from swellings after operation, and death. However, I stated that unless I had some of the pus, or sputum,

for examination, I could say nothing definite. The farmer again wrote the veterinary surgeon could not diagnose, and local injections with dilute carbolic acid did not do much good.

So I visited the place and found one cow with a swelling upon its hind leg. I opened the swelling and preserved some of the blood and pus which were discharged. Subsequently I found in the pus and blood, besides common pus-bacteria, the tubercle bacillus, which shows that the affection was, no doubt, tuberculosis. The particulars of the disease, as recorded by the farmer, fully satisfied me about this point, with the investigation made by me. I made, however, other observations which throw light upon the subject in question.

One of the head which had died from tuberculosis had been thrown before the swine. The latter had devoured it after it had been opened. A few days later some of the swine were walking around with swelling on their backs and limbs similar to those known from the cattle. The local veterinary surgeon wisely had advised the farmer to destroy the hogs. I could not ascertain whether this had been done or not. What became of them I do not know.

The barns and stables were extremely dirty; the filth was thick upon the walls and posts. I said that *if the herd were, next winter, kept in the stable while it was in such condition, where the tumors had been opened, and where the sputum from the diseased animals was still, although dried, on the floors, a new outbreak might be expected.* The farmer sold all his milk for the city restaurants, and I had reason to believe that very little had been done in order to protect the public against the milk from the tuberculous cows.

The farmer knew that something was wrong, for he asked me not to mention that there was any contagious or infectious disease in the herd. His reasons were that such statements would "hurt the business"—of which I entertain no doubts.

But the farmer did not know that tuberculosis in cattle is a danger to the community; he had no knowledge of hygienic measures in stock breeding; he did not know that tuberculosis, which is much more dreaded than cholera or small-pox, *could be transferred* from the sick cows to those who handled them; from the tuberculous carcasses to the swine; from the animals to those who refreshed themselves in the town restaurant.

So I promised to diagnose the case, and then I advised to clean the stables and barnyards, where filth and dirt, probably

many years old, had accumulated, even in the immediate neighborhood of the dairy. I also advised a thorough cleaning with disinfectants, such as carbolic acid (phenol), formalin, and others.

If the barnyards and stables had been allowed to remain in the described condition the coming winter would have witnessed a fresh outbreak of tuberculosis in the herd. Since my return I have heard of no further cases of tuberculosis in cattle in or around the town.

Subsequently the state veterinarian visiting the place found, by applying to the individual cows the tuberculin test, that about 50 per cent were affected. Before, however, preventive measures could be taken, and the cattle killed, the latter were sold and shipped to the great central meat markets outside of the state.

In the summer of 1895 I was commissioned by the state dairy commissioner to carry out a series of investigations, to the effect of ascertaining how far the commercial milk of our state was affected by tubercle bacilli. The beginning of the studies came about in the following manner:

For some time complaints had been made in the town of Ottumwa to the effect that the milk supply was not exemplary as desired. Several samples of commercial milk were found to contain pus, or thus suspected. The health officer, Dr. Baker, had examined various samples and had found pus. Three samples of milk of the infected supply were given me by the dairy commissioner and submitted for examination.

In this instance, as, with a few exceptions, in all other, the milk, when received at the dairy commissioner's office, was properly marked and placed for a period of five minutes in the centrifugal machine employed in the Babcock method of butter-fat testing. In recent work of similar kind, such as that of Dr. E. C. Schroeder, of the Bureau of Animal Industry³, this method has been uniformly employed. The purpose of submitting the milk to centrifugal forces is to collect all sediment and solid matter at the bottom of the glass. It has been demonstrated by Scheurle¹⁸ that the tubercle bacilli, if dispersed in milk, will be collected at the bottom of the glass, if the milk is rotated in the manner already mentioned, while other bacteria will show the directly opposite, namely, the centripetal tendency.

The three samples received, as mentioned, were examined, and one of them, representing the bottom layer of the milk rotated, was found contaminated with tubercle bacilli and pus.

The manner in which the tests were made throughout the whole course of these investigations was the following:

Each sample of milk was treated exactly like a sample of sputa suspected of being able to furnish evidence of existing tuberculosis. The method of staining was in nearly every instance that of gibbes.

The milk first found to be contaminated had come from the supply of a certain retail milk dealer.

Through the local milk inspector, samples were taken from the individual cows in the herd furnishing the supply. Twenty-two samples were received and numbered, by the milk inspector, from 1 to 22, inclusive; of these, numbers 1, 3, 4, 6, 7 and 10 were contaminated with tubercle bacilli. In no instance the infection was surprisingly great, but so far as I am able to judge, in the absence of facilities for making inoculation upon guinea pigs, the numbers contained in each of these samples would be able to cause infection, if they should be able to reach such places in the animal system as would be susceptible to their infective and destructive powers.

The result of my study was promptly reported to the milk inspector, with orders to prevent the sale of milk from the six cows whose milk had made a positive response to the test. At the same time the inspector was notified to inspect the dairy and subject the six cows to a minute examination. The inspector promptly paid the required visit and reported as follows:

"These cows have been kept continually in the barn for the last five years. Four years ago last February he had a cow in this same end of the barn die of what appeared to them consumption, but they knew nothing of the nature of the disease and paid no attention to it. A year later the cow that stood by her side died in a similar way, but since then they have not lost any; but every one of the cows (whose milk is) now pronounced infected with tubercle bacilli has stood, ever since, in this same row, and all the other cows in the barn are free."

The appearance of cow No. 1 was thus reported:

"I did discover in this cow, on the inner side of front teat, an indication of a small lump, but manipulation dissipated it. I discovered this when I took samples also."

All the other cows appeared to have healthy looking udders and appeared to be in average good health.

I was, from the beginning of these examinations, perfectly well aware that examinations of cows' milk for tubercle bacilli were in no way a sure criterion with regard to the distribution of tuberculosis in cattle. The two principal questions around which I am trying to gather explanatory facts are:

First.—How far the commercial and other dairy milk is contaminated with tubercle bacilli; and,

Second.—Under what condition tubercle bacilli, and probably their toxic products are found in cows' milk.

I examined 563 samples of milk. Of these, 359 were from individual cows, and 204 from herds; that is, composite samples.

The samples were taken in 40 or 100 cubic centimeter bottles, and each bottle was at once marked by the inspector, in such a way that the cow from which it came might be at any time recognized.

First, the inspector took samples from the milk cans belonging to the different dairymen at that place. If any of these samples were found to be contaminated, the herd, or rather the milk, was kept in quarantine until the individual cows of the same herd had their milk examined. Those whose milk gave positive response to the test were ordered removed and their milk prohibited from the market.

Of the 204 composite samples, four, that is, about 2 per cent, were contaminated; and of the 359 samples from individuals, fifty-one were contaminated, that is, 14.2 per cent.

In order to procure, if possible, further evidence of the presence of the contagion and the conditions under which these animals were kept, I visited one of the places (Ottumwa) where a comparatively large number of cows had given evidence of being tuberculous. At the time when I arrived, most of these cows had been "dried up," sold or otherwise removed, so that I could not see them or obtain another supply of their milk. I had an opportunity, however, of inspecting eighteen head, and of obtaining from all of these samples of the contents of their mammary glands. These eighteen head of cattle appeared as follows:

1. Healthy looking; on left back teat a small ulceration, partially healed.
2. Lean; fair looking.
3. }
4. } Normal looking individuals.
5. }

6.	} Normal.
7.	
8.	
9.	
10.	
11.	} Small ulceration on the lower left side of neck.
12.	
13.	
14.	} Normal.
15.	
16.	} Healed sore and one small ulceration on left flank.
17.	
18.	} Normal.

Twenty-four samples of milk from individuals which had previously, through their milk, given indications of tuberculous affections, were secured. Two of these samples (Nos. 4 and 24) were found to contain *tubercle bacilli*, and the latter were developed in cultures upon bouillon.

Should I venture to deduct any results from the facts now recorded, I should emphatically say that bacteriological analyses of milk are not sure criteria respecting the distribution of tuberculosis among cattle. I would say, however, that as long as we do yet know very little of the important laws governing the disease, and as long as the public mind and the public treasury are not prepared to undertake radical measures to eradicate tuberculosis, bacteriological examinations of milk supplies might tend to point out the cores of infection at the different places, and to point out certain—but by no means all—infected cows. I have already mentioned how and why it will be utterly impossible, for a considerable length of time, to “eradicate” bovine tuberculosis, or to stamp out this disease completely from all infected districts—and which districts are not infected?

It is possible, however, and certainly it becomes the duty of the state to disseminate among its citizens as full and detailed knowledge of the means of preventing and restricting the spread of this disease, as is prompted by the importance of the subject to every one.

Increased knowledge of consumption and of the measures necessary to restrict and prevent it, may have been a partial cause of the reduction of mortality from tuberculosis in Massachusetts. In 1886 the average mortality was 156 per 1,000; in 1887, 141; in 1888, 134; in 1889, 124; in 1890, 130; in 1891, 116; in 1892, 111. A reduction in six years of 45 per 1,000.

The state, further, has the power of tracing and exploding the centers of infection often met in badly infected herds, in dense population, and in filthy locations.

The tuberculin test is, although not the ideal of tests, the main factor in the discovery of tuberculosis in cattle. Although not altogether infallible, it will enable us to point out nearly every case of the disease. This circumstance prompts its extensive use; still I do not think that we should advocate any legislation based thereon. Physical examinations of suspected living or slaughtered cattle should be undertaken, even when the tuberculin test is employed.

Bacteriological investigations tend to deepen our knowledge of infected matter. They should always be called to aid, and supplement the other investigations. They furnish the crucial evidence of the presence of the disease by pointing out the bacilli which are always found in tuberculous lesions, except when nature or suitable treatment, or both, have effected a cure, or healing.

Pathological examination of infected tissue should also be carried out. This line of work, with the one just mentioned, will in time furnish the key of our intelligent understanding of the mode of effect of the tuberculin test, and, in fact, of the disease, itself.

Although bacteriological studies of milk supplies, with special reference to the presence of the tubercle bacillus, does by no means pretend to rival the tuberculin test, they are of no little importance. Investigations along this line, will, if properly supported, also tend to deepen our knowledge of the entire question, and certainly are of benefit to public health in so far that the infected milk is prohibited from sale and thus from disseminating the disease. The general public is slow in comprehending scientific facts, and its mind is easily turned against what it does not understand. We, depending upon the public for the support of our work, should be very careful in regard to our proceedings in arresting the spread of consumption. We should employ *all* the means known to science of discovering the location of the disease, and of restricting its prevalence, although these means are not all easily applied. Some of them are yet developing toward perfection. None of them will be perfect to-day or to-morrow.

REFERENCES AND LITERATURE.

- ¹ See Abstract of Sanitary Reports, Vol. X, No. 22, p. 157, 1895.
 Report Maine State Board of Health, 1894, p. 361.
 Bang, Maelkeritidende, 1895: Aeroc Folkeblad, November, 1895.
 Enumerated by Barg: Tuberkulosen blandt Husdyrene i Danmark, Copenhagen, 1890.
189.
 Klenke; Ueber die Ansteckung und Verbreitung der Schreifelkrankheit bei Menschen durch den Genuss der Kuhlmlch. 1866.
 On the identity of scrofula and tuberculosis, see Dr. A. Lingard, Relation of Scrofula, Lupus and Tuberculosis (Report, Local Government Board, London, for the year 1893).
- ⁷ See Bulletin No. 3, U. S. Dep. of Agriculture; Bureau of Animal Industry, p. 60, 93, and Bulletin No. 7, etc., p. 73, 1894.
 Infectiousness of Milk. Result of Investigations made for the Trustees of the Massachusetts Society for Promoting Agriculture. Boston, 1895.
⁸ Investigation concerning bovine tuberculosis, Bulletin No. 7, Bureau of Animal Industry, U. S. Dep. of Agriculture, p. 75. Washington, 1894.
⁹ Arb. a. d. Kais. Gesundheitsamte, VII, 209, 1891.
 See, also, for general information:
 Bulletins of Agricultural Experiment Stations:
 Texas, No. 30, March, 1894.
 North Dakota, No. 14, June, 1894.
 Massachusetts, Hatch; No. 3, January, 1889; No. 27, December, 1894.
 Cornell University Station, No. 65, April, 1894; No. 62, December, 1894.
 Pennsylvania, No. 21, October, 1892.
 Wisconsin, No. 60, July, 1894; No. 44, April, 1895.
 Iowa, No. 29, 1896.
 Alabama, No. 67, November, 1895.
- Cressy, N.: Transmission of Tuberculosis from the Meat and Milk of infected Animals. Hartford, Conn., 1881. (From the Third Annual Rep. Conn. State Board of Health.)
 Report Pennsylvania State Board of Health for the year 1893, pp. 291-301.
 Report Maine State Board of Health for the year 1894, pp. 50-64, 108, 367-374, and 361-363. Papers by Russell, Freeman and Coit.
 Report Maine Agricultural Exp. Station for the year 1894, pp. 124-133, 156-162.
 Science, Vol. XXII, No. 660, October 27, p. 226, 1895.
 Minneapolis Daily Tribune, March 30, 1895. Report on Infection of Meat and Milk by Dr. *Acery*.
 The Dietetic and Hygienic Gazette, Vol. X, 1894, pp. 495, 496-497, 504-526.
 The Doctor of Hygiene, Vol. VIII, No. 8, June, 1894, p. 251.
 Annual Report of the State Veterinary Surgeon of the State of Iowa for the year ending June 30, 1894.
 Watson, L. A.: Tuberculosis, its Prevalence, Communicability and Prevention. Concord, N. H., 1894.
 Peters, Austin: Tuberculosis. (The Journal of Comparative Medicine and Veterinary Archives, XVI, No. 6, pp. 337-347, 1895; see, also, pp. 353-369.)
 Proceedings of the Eight Annual Conventions of the Association of American Agricultural Colleges and Experiment Stations, held at Washington, D. C., November 13-15, 1894. Washington, 1895 (U. S. Dep. of Agriculture, Office of Experiment Stations, Bulletin No. 24), pp. 32-58.
 Bryce, P. H.: Report on Tuberculosis in Ontario. Toronto, 1894. Reports of the Bureau of Animal Industry, in the Annual Reports, Dep. of Agriculture, U. S. Government.
 Yearbook of the Department of Agriculture for the year 1894 contains the following important papers:
 Solomon, D. E.: The federal meat inspection, pp. 67-80.
 Alford, H. E.: The dairy herd: its formation and management, pp. 256-316.
 Schuchardt, E. A. de: The Pasteurization and sterilization of milk, pp. 331-356.
 Smith, Theobald: Some practical suggestions for the suppression and prevention of bovine tuberculosis, pp. 317-330.
 Eighth Annual Report Iowa State Board of Health, 1895, papers by Becker, Stalker, Ray and others.
 Iowa Health Bulletin for 1893, 1894 and 1895.

STATE INSPECTION.

MILK WAGONS, CANS AND UTENSILS.

The milk agents now report upon the sanitary condition of the milk wagon, depot and cans, but the authority to enforce cleanliness is more inferred than real; the sale of unclean milk is prohibited, but milk may contain more or less dirt and filth caused by improper handling and unclean milk pails, cans, measures and wagons, and still one would be unable to absolutely tell from use that it was not all that it should be. When wagons and cans are reported in an unclean condition, there is no authority vested in the commissioner to compel the owner to clean them. Our duty in the past has been to inform the parties and request them to clean up. When tin cans and utensils become dented and worn, so as to expose the iron coming in contact with the milk, they should be discarded, as no amount of cleaning will render them fit for use.

STABLES, YARDS, FEED AND WATER SUPPLY.

Mr. Hill, the milk agent at Ottumwa, in reporting upon the sanitary condition of the dairies last summer during the investigation mentioned in this report, on one occasion says: "I find the sanitary condition of Mr. —'s yards and pens in bad (odor) order. The stench from his pig pens is simply intolerable. I have reported to the board of health."

In a letter one week later he writes as follows in regard to the same party:

Ottumwa, Iowa, July 25, 1895.

W. K. Boardman, Des Moines, Iowa:

DEAR SIR—Yours of the 23d, with enclosure, was received yesterday. The notices required by the letter have been served. Mr. — says he will take the ones infected out of his herd. I told him he must also clean up, and disinfect his yards, pens, etc., but he did not seem inclined to do that, and it looks as though if he don't want to do so, he need not. I have kept the city board of health fully informed of the sanitary condition of Mr. —'s

premises, and also of the fact that he is buying garbage from the hotels, chop houses, etc., and hauling it home in his milk wagon, along with the empty cans used in carrying milk, but they do nothing about it. While some of the members want to do all they can in the matter, others seem to think it is a state offense and state officials are the ones to conduct the prosecution. If so clear a case of violation of law is permitted to go unpunished it will be useless to undertake any further work in this direction, and I hope I will not be called upon to perform any more such unpleasant duties.

Respectfully,

(Signed)

E. B. HILL.

Milk cannot be handled in such an atmosphere and under conditions such as are described in this letter, and not become contaminated and unfit for domestic use. The hauling of garbage from hotels and chop houses in milk wagons would be sufficient cause to revoke the permit of a dealer had this department that authority.

Many of the stables in which dairy cattle are housed are poorly constructed for the purposes for which they are used. They are often hot, badly ventilated, dirty and overcrowded. The cattle are deprived of fresh air and sufficient exercise. Swill and garbage feeding should be condemned, and none but the purest of water given to the cows or used in the cleaning of cans and utensils. Nothing is better than plenty of fresh air and sunlight for the health of the cow and the purity of milk. All wagons, cans, and utensils should be exposed to as much fresh air and sunlight as possible. Sunlight is a great factor in the destruction of diseased germs, especially the bacillus tuberculosis. The water supply for dairies is a most important subject for inspection. Many of our farmers depend upon shallow wells for their supply, and these are oftentimes located near out-houses and stables, or in barnyards filled with manure, and in a locality so as to receive much of the filthy drainage from the barnyard and buildings. An alarming result of the terrible effect from the use of impure water in the dairy business occurred at the town of Stamford, Conn. The following account is taken from the New York Times:

The milkman in Stamford, Conn., who caused a few weeks ago in that city, by the sale of infected milk, 400 cases of typhoid fever, twenty-one of which were fatal, has been arrested and is now in jail. The charge is that he is guilty of manslaughter, in that he caused the death of John F. King, one of the victims, by selling milk containing the specific poison, or germs, of typhoid.

It may be that the history of milk epidemics of typhoid fever will disclose an example of the prosecution of some person who was the agent of infection, but we do not recall any case of the kind, and are inclined to

think that this is the first. No one of the recent epidemics in this country—whether they were caused by the infection of milk or the pollution of water—was followed by such action, even when the evidence showed very clearly to whose ignorance or carelessness the epidemic was due. Our readers may remember, among other examples, the water epidemics at Plymouth, Penn., at Windsor, Vt., and the milk epidemics at Springfield, Mass., Somerville, Mass., Waterbury, Conn., and Montclair, N. J., involving in the aggregate about 1,000 cases and in the neighborhood of 250 deaths. These great losses were caused by the recklessness or ignorance of six or eight persons. At Montclair a milkman—but not the person from whose dairy farm the germs of the disease were disseminated—suffered for his ignorance, but not as a result of prosecution. In a spirit of bravado he drank milk which was infected to emphasize his proclaimed belief that the sanitarians and doctors were misleading the public. Thus he caught the disease of which he died two or three weeks later.

This epidemic in Stamford was clearly traced to the infection of the milk sold by Blackham, the man now in jail. The bacilli of typhoid were found in the milk and also in the water of a well on his premises. He admitted that he had been accustomed to wash his milk cans with this water, and it may be that he also adulterated the milk with it. It was a shallow well, and the surface of the water was only a little below the surface of the ground around it. It was plain enough that sewage from a receptacle within a few feet of this well had been going into it, and the receptacle was within a few feet of a group of dirty habitations in which there had recently been one or more cases of typhoid. We understand that it was admitted by the milkman that he regarded the well water as too foul to be used for drinking, although he thought it was good enough to be used for washing his milk cans.

This was a case of wholesale poisoning, but it is not probable that the milkman was conscious of the fact that he was poisoning his customers. One of them was his own family physician, who was himself, with one of his children, prostrated by the disease. Another was the chairman of the city council's committee on health. The trial of this case may reveal clearly to everybody the milkman's ignorance and carelessness and lack of regard for cleanliness, but we do not think it will show that he was consciously responsible for the deplorable results of his action. We do not say that he ought not to be prosecuted; on the other hand, we think that he should be tried—although he will not be convicted of manslaughter—in order that he may suffer some punishment, and that public attention may be directed to the sanitary principles and laws which he violated, and which so many other persons ignorantly and carelessly disregard. * * *

There is pecuniary economy in paying the cost of sanitary inspection. This, we presume, is now realized by the people of Stamford. The cost of such an epidemic is very heavy, not only in bereavement, hardship, and sorrow, but also in the money loss caused by illness, disability, and death. It pays to guard the milk supply and the water supply in order that the ignorant and the reckless and the greedy may be prevented from poisoning the innocent and unsuspecting who rely upon the officers of their local government for protection.

INSPECTION OF DAIRY COWS.

Our experience in the Ottumwa investigation and the unsatisfactory results therefrom demonstrate the necessity of placing the entire inspection of the condition of the wagons, utensils, stables, yard, food, and water supply, and the cows themselves under the absolute control of the dairy department. Capable men should be employed to do this work, and sufficient means and facilities provided for the inspection of such dairy herds as are supplying milk in the cities under the jurisdiction of this department. "Where ignorance is bliss, it is folly to be wise," might apply to the state of mind of the consumer of milk in our cities in the past, but conditions have changed, and the general public, as well as the student of these questions, now believe and realize the risk that they are daily taking in using milk the production and sale of which has not been guarded by proper inspection. The individual cow should be reached, and every dealer should know that his milk is not only of a standard quality in butter fat, but that it is absolutely free from all contagious or infectious diseases. The use of the tuberculin test and the bacteriological examination of milk, if put in practical operation, will soon weed out the diseased animals from the dairy herds furnishing milk to the people under our jurisdiction. This is by no means a new question; the same subject has occupied the attention of the health departments of many of our larger cities. William R. Kerr, commissioner of the board of health of the city of Chicago, urges the state authorities to adopt the following rules and regulations:

1. An inspection of the physical condition of the animal, so as to prevent a diseased milch cow—especially one afflicted with tuberculosis—from being used for dairy purposes.
2. An inspection of the stables and premises where cows are kept for the production of milk for market, and of the food of such cows, so as to prevent an unhealthy condition of the premises or the use of food that produces impure, diseased, or unwholesome milk.
3. A supervision of the method of handling milch cows and their product, so as to prevent the adulteration of milk or cream intended for sale

by the addition of water or any other foreign substance—such "foreign substance" to be held to include contamination from the person or clothing of employes, or from unclean utensils or surroundings. And in this connection the inspection should extend to the health of milkers and others engaged in handling milk, so as to prohibit those suffering with eruptions or contagious diseases from pursuing their avocation until free from the danger of conveying contagion or infection to the milk.

Dr. Gehrman, the chemist of the health department of Chicago, expresses himself as follows on the question of dairy inspection:

Beyond question, the only way to minimize tuberculous disease is to have the state organize a dairy inspection department. We must go to the source and examine the cows, for when the milk of scores of cows is mixed it is impossible to trace the disease. The inspection must be done in the country.

The balance of his interview is so well stated and pointed that we give it in full:

Illinois is one of the states that has no state inspection of milk. Every day evidences of the necessity of a more thorough inspection are piling up. The archives of the health department are full of proofs of death directly traceable to milk, and even the officers of that department acknowledge that their reports do not tell the whole story.

Chicago uses in the neighborhood of 518,000 quarts of milk each day, and all this immense quantity comes from the country. On reaching the city the milk is received by the dealers and taken to depots where it is kept on ice until the next day. This enables the dealer or peddler to secure a supply of cream for customers able to pay for it.

It is a matter of common medical report that milk is one of the most common agencies for the transmission of disease. As showing the danger of infection through this means Dr. Gehrman recalled a case that came to the notice of the health department. Scarlet fever occurred in the family of the proprietor of a milk depot. He continued selling milk, and as a result more than a score of persons became ill with the disease.

Two cases of infectious diseases in milk depots have just been reported to the health department. One is scarlet fever and the other a serious case of diphtheria.

From its liquid form milk is easily an agency for infectious diseases, and because of its being placed in various vessels, many of which may not be thoroughly cleansed, it easily acts as an agent for the transmission of contagious diseases. Among the diseases carried from person to person by milk are many of those most feared by man. They include: Consumption and tubercular diseases of the bones, kidneys and other organs; small-pox, measles, mumps, scarlet fever, diphtheria, whooping cough and cholera. Excepting cholera and typhoid fever, all of the above are infectious diseases; that is, the disease germs may be carried by the air to the milk. Cholera and typhoid fever are not infectious, but they are contagious and easily transmitted by milk. Polluted wells are most frequently sources of typhoid fever, and, as it is a fact well known to science that a well drains

an area of ground three times as wide as the well's depth—that is, a well ten feet in depth drains the ground for thirty feet around—the danger is great. The fact is of importance when it is considered that nearly all of the water used in the country is drawn from wells which frequently are located only a few feet away from the barnyard cesspools. If water is not taken from these wells to dilute the milk it certainly is used to wash out the cans, and where the well is polluted the disease germ is introduced to the can and enters into the milk. Yet the danger is much reduced by the absolute necessity of using boiling water every day to keep the cans "sweet," so as not to sour the milk.

While there is great danger of the transmission of many other diseases by means of milk, by far the greatest danger is from tuberculosis. In states having a dairy inspection department, and in a few experimental cases in Illinois, it has been proved, it is claimed, that at least 25 per cent of all the milk-giving cows have tuberculosis. "After thirty-five years of inspection the Massachusetts authorities say," said Dr. Gehrman, "that plain, common sense shows that the danger of infection, where tuberculosis exists, is a real one, and there exists sufficient experimental data to prove the fact." It is asserted that more than 8 per cent of all mortality is due to tuberculous diseases directly traceable in almost every case to milk.

PROFESSOR CONN IN U. S. BULLETIN No. 25.

H. W. Conn, professor of biology in Wesleyan university, in Bulletin No. 25, United States department of agriculture, has the following on the subject of bacteria in milk and dairy inspection:

MILK.

Probably the most important practical result connected with our milk supply has been a thorough investigation of the subject of milk sterilization and pasteurization, but this subject is not to be considered in this bulletin:

Next in importance stands the recognition of the sources of bacterial contamination of milk. As soon as Lister had shown that fresh milk contained no bacteria it became at once evident that the bacteria present in ordinary milk are due to contamination from the exterior. Further study has shown also that the usual types of milk fermentations are due to usual conditions, while the uncommon types of milk fermentation, which are commonly troublesome, are due to uncommon conditions affecting the barn or dairy. It also appeared that the remedy against these unusual conditions is to be found in cleanliness. This has been emphasized for a number of years. If there has been anything taught in the last three years it has been the extreme necessity for cleanliness. Poor milk, poor butter, and poor cheese are in a vast majority of cases to be attributed to

uncleanliness in the barn or dairy. Not only so, but we have been learning more definitely where we may expect to find the sources of rancidous bacteria, and therefore to what point to direct our special attention in the way of cleanliness.

The great source of bacterial contamination of the milk is the cow herself. This does not mean the bacteria from the mammary gland, but those connected with the exterior of the cow. It is true that there are other sources of importance. The food that the cow eats (indirectly), the cow stall itself, the water with which the cans are washed or with which the milk is adulterated, the hands of the milker as well as his clothes are all occasionally the sources of bacterial contamination. But after all we must look upon the cow herself as the cause of the most trouble. We thus learn that the important point toward which to direct the cleanliness is the cow herself. The farmer never appears to feel that it is necessary for him to keep his cows as clean as he does his horses; but there is very much more real need for cleanliness in the case of the cow. Upon such cleanliness will depend his ability to obtain a pure, wholesome kind of milk, while so sure as he allows his cow to become covered with dirt and manure, so sure will he be liable to have trouble in the quality of his milk supply.

A most valuable gift of recent years to our knowledge of bacteriology is a more definite understanding as to what we may fear in the way of diseases being distributed by milk. We have now acquired a pretty definite knowledge of the kinds of disease distributed by milk, and of the sources from which the milk gets these pathogenic germs. As has been shown in previous pages, the diseases which may be directly transmitted from the cow to man are tuberculosis, diphtheria, scarlet fever, and the foot and mouth disease. Diseases which may contaminate the milk by carelessness subsequent to the milking are typhoid fever, diphtheria, and possibly scarlet fever and cholera. The cases of typhoid fever distributed by milk (of which many are on record) have been commonly traced either to contaminated water used in washing the cans or in adulterating the milk, or to some individual handling the milk who also served as a nurse to a typhoid patient. Diphtheria has also with certainty been carried through milk from secondary contamination. Scarlet fever and cholera are as yet somewhat uncertain. We have learned further that undue multiplication of some of the common forms of milk bacteria may, through their poisonous toxins, produce summer diarrhoea and cholera infantum.

Now, after recognizing these facts, we are in a far better condition to guard against such troubles. To guard against tuberculosis is the most difficult, and our state governments having awakened to the danger are trying to meet this problem. But with healthy cows and a proper care of milk, there is no need that our milk supply should be the means of distributing this or any other disease. There is no difficulty at the present time in giving a series of general rules to the milk producers and milkmen which will enable them to avoid these sources of difficulty. They should keep their cows healthy; they should keep them clean; they should keep careful watch upon the cows and exclude from the milk supply any one which shows signs of sickness, especially any form of udder inflammation or infection; they should be especially careful about the source of water which is used in washing milk vessels, and should never allow for such purposes the use

of well water near a residence in such a position as to make a contamination from sewerage or privy vaults a possibility; they should see that no persons handle the milk or milk cans who have any connection with a sick room of any contagious disease. Such precautions will enable the milk producer to avoid the danger of distributing any of the infectious diseases which have been traced to milk, and will at the same time usually enable him to avoid troublesome fermentation.

DAIRY INSPECTION.

One of the subjects which has been little by little attracting more and more attention among bacteriologists and dairymen is the desirability of some form of dairy inspection. Our laws have furnished us with a milk inspection which protects our pocketbooks, but we are learning that the adulteration of milk by water is really of far less importance to the public in general than the contamination of the milk by improper types of micro-organisms. We have learned, as already pointed out, that milk is occasionally contaminated with pathogenic germs, but that such organisms come only from cases of disease—either diseased cattle which directly contaminate the milk, or diseased persons which indirectly are a source of such contamination. We have learned that if we exclude such sources of contamination, milk drawn from healthy cattle, even though it may contain a large number of bacteria, is perfectly good and wholesome—the micro-organisms producing not the slightest injury to the human body, and in many respects being directly beneficial to the dairymen. While the pathogenic organism may be guarded against by the sterilization of the milk before it is used as food, we have learned in recent years that this method is unsatisfactory. Such sterilization slightly injures the value of the milk as a food, and secondly, it appears to be impossible to get it universally adopted owing to the difficulty and the trouble of sterilization. It is impossible to depend upon universal sterilization to prevent distribution of disease through milk. If the public is to be freed from the possible effects of pathogenic organisms in milk, the proper point to apply precautions is at the sources of milk supply, and to prevent its contamination by pathogenic organisms. This is perfectly possible, provided a proper knowledge of the necessity for care can be distributed among our milk producers. There is no need of milk becoming contaminated by any of these pathogenic organisms with a possible exception of tuberculosis, if care and scrutiny are used by the milk producer to prevent the milk from diseased cattle being distributed, and to prevent its being placed under conditions for secondary contamination from diseased persons.

With all of these facts in mind it becomes plain that the proper public precaution against the evils resulting from such contamination consists in some system of dairy inspection, some system by means of which the public may have a direct knowledge and direct control over the conditions of its milk supply. Already such a dairy inspection in one form or another has been attempted in several places. In certain regions in Switzerland a dairy inspection is enforced. In Germany and in England there are laws regulating the method of production and distribution of milk. They are as yet largely in their infancy and have been of little practical good up to the present time. In America little has been done in this line, although in some states an attempt has been made in this direction. In New Jersey a

system of furnishing "certified" milk has been established, by which a committee of experts certify to the healthful condition surrounding the production and distribution of a certain grade of milk which has their certificate. Such "certified" milk is reliable, but of course demands a higher price than ordinary milk.

The chief advantage in such dairy inspection is to the milk producer. In Switzerland and in the United States the plans started with the dairymen. Of course the benefit is also largely to the public, but the producer of the milk will in the end gain the greatest advantage in the increased confidence which the public may have in his product. At the present time the public is rapidly becoming suspicious of the healthful qualities of our milk supply, and just so far as this suspicion can be allayed by the inauguration of a proper dairy inspection, just so far will the milk industry be benefited.

It must, however, be noted that even such a dairy inspection will not render milk absolutely sure. The insidious disease, tuberculosis, may, and frequently will, with our present knowledge, escape the notice of even an expert. To what extent tuberculosis may be stamped out by the use of tuberculin can hardly be stated, but at the present time many an early stage of tuberculosis will escape notice. Instances have been noted of fancy herds of cattle, kept under the best possible conditions, infecting their milk in such a way as to produce the disease in those drinking the milk. We cannot therefore expect that the dairy inspection will render milk absolutely reliable unless the tuberculin methods eradicate the disease among our cattle. But such a dairy inspection will probably remove entirely the dangers from the distribution of typhoid, scarlet fever, or diphtheria, and probably of all diseases with the exception possibly of tuberculosis; and as knowledge is extended the demand for such dairy inspection will come, not only from the dairymen, but also from the public.

LICENSE MILK DEALERS AND PRODUCERS.

It is evident to anyone who will give this subject a little thought and attention, that the expense of such a system of milk inspection as is advocated in this report will be considerable. This expense should be borne mostly by the producers and milk dealers. As we stated before, the public is entitled to protection against impure and diseased milk, therefore dealers should be required to guarantee the quality of the article sold. Where the dealer and producer are not the same person, both parties should be licensed, as the only safeguard to the consumer is in knowing that each individual cow and the sanitary surroundings of the premises on which the milk furnished his family has been carefully inspected. Many dealers have

written and talked with us upon this subject and almost universally favor a reasonable license fee. Many of them complain that their business is injured by spasmodic dealers who sell milk during the spring and summer months when their cows are fresh and in full flow of milk, and pasturage is plenty and feed cheap, but drop out of the business when feed becomes scarce and the supply of milk is reduced. Another complaint is made against parties in the cities owning one or more cows and supplying immediate neighbors with milk. The desire of the milk dealer who advocates a license is to cut off both of these kinds of competition.

The recommendation of this department in favor of a license system is based upon an entirely different foundation, namely, that the patrons are entitled to clean, pure, rich, and wholesome milk, free from the least suspicion of disease, and that the dealer is under moral—and should be put under legal—obligation to furnish such an article, and that the proper way to raise sufficient revenue to support such a system of inspection as will insure this result, is to license the dealer in and producer of milk. While this is the basis that should control, the regulation should be such as would protect and rightly guard the interest of the regular dealer, and place all upon the same footing.

The license should be issued when the parties commence business, and all should expire on the same date at the close of the license period, which should be in the spring of the year. The most complaint is waged against the one, two, and three cow dealer. We believe that any person should have the right to keep a cow to supply his own family with milk, and when he has a surplus, sell to his neighbors, but when he increases the number of cows for the purpose of selling milk for profit, he should pay a license, no matter how the milk is sold and delivered. It is argued that such a license would be a hardship to many small dealers and poor people. Admitting that such would be the case, we nevertheless believe that this question is of such vast importance, and the results from the use of disease bearing milk are so far reaching that no monetary consideration should stand in the way of the adoption of a well guarded system. The parties selling the surplus milk from one cow do not keep her for this purpose, and the neighbor who gets his supply from this source has every opportunity to keep informed as to the condition of the animal and her

surroundings, and can at any time get his supply from some other source if conditions are such as do not satisfy him. He has the entire matter in his own hands and is alone responsible to himself and family. Not so with the customers of the milk wagons; they are obliged to place their confidence in the milkman of their selection and if they are imposed upon, either intentionally or through ignorance or carelessness, they are in most cases none the wiser, although the consequences may be of the most severe nature. The life and health of the family are at stake, and citizens have the right to expect and receive proper protection from the state.

USE OF MILK PRESERVATIVE.

Sufficient attention has been given to this subject so that a definite conclusion has been arrived at in regard to the use of all kinds of compounds and preparations advertised and sold for the purpose of retarding the natural fermentation of milk. Any addition of this kind to milk that is offered for sale is a violation of law. We have been asked by promoters of different preparations to endorse their compounds, but have always refused, and in doing so assured them that it would be our duty to vigorously prosecute any milk dealer found using any of these preparations. Some have taken issue with us, and in order to be fortified we submitted the question to the attorney-general of the state for his opinion. The following is his reply:

STATE OF IOWA,
OFFICE OF ATTORNEY-GENERAL,
DES MOINES, Iowa, September, 18, 1895.

Hon. W. K. Boardman, State Dairy Commissioner:

DEAR SIR—Your favor of the 17th inst. at hand, requesting my opinion upon the following:

"Is the adding of a small quantity of any substance, either solid or liquid, to milk, for the purpose of preventing it from becoming sour or fermenting for an unusual time, an adulteration; and, further, would such an addition to pure milk cause it to be impure, and would the sale of milk so treated be prohibited, either as adulterated or impure, by section 1, chapter 50, laws of the Twenty-fourth General Assembly?"

The section referred to is:

"If any person or corporation shall sell or exchange, or expose for sale or exchange, deliver or bring to another for domestic use, or to be converted into any product of human food whatsoever, any unclean, impure, unhealthy, adulterated, unwholesome or skimmed milk, or milk from which has been held back what is commonly known as strippings, or milk from an animal having a disease, sickness, ulcer, abscess, or running sore, or either taken from an animal fifteen days before, or less than five days after parturition, shall upon conviction thereof be fined not less than \$25, nor more than \$100," etc.

The questions propounded are largely questions of fact. Whether it would be a violation of the law would depend upon the quantity used, the effect on the milk, and the effect upon the people who use the milk. The object of the statute and the true purpose of the legislature was to prevent any but milk as it came from good, healthy cows, being sold or exposed to sale. Pure is defined to be free from adulteration. In a certain sense any foreign substance added to the milk which either increases its volume or changes its properties, impairs its purity and makes it impure. The use of the word "adulterated" in the statute to my mind refers more especially to putting in the milk water, or something to increase its bulk and impair its richness. Practically adding a few drops of some liquid to a gallon or two of milk would not, it occurs to me, be such an adulteration as courts and juries would consider a violation of the statute. But there is another view. If the preparation referred to changed the properties of the milk so that the mixture was other and different from milk as it is taken from the animal, I do not understand how it can be said to be pure milk. I am not unmindful that pure and impure are comparative terms. It would seem that there should be no comparative or superlative to the adjective pure, but there is, and we must accept the words in the ordinary use of language. Hence it is said to be a comparative term; and if, as a matter of fact, the preparation added made no perceptible change in the properties of the milk, and was not injurious to the human system, or unwholesome, in the ordinary use of language it would not be said to be impure. What effect the substance referred to in your communication has upon the milk, I have no means of knowing. The only effect named is that it prevents the milk from becoming sour or fermenting for an unusual time. This would indicate some change in the properties of the milk. Many persons may purchase milk and want it to become sour for culinary purposes. Such a one, on finding the milk did not turn or become sour would conclude that the milk was impure; that something was added to it or taken away which made a change in its properties or elements, making it different from milk drawn from good, healthy animals. I am inclined to the view that any addition to or subtraction from milk as it is drawn from the animals would be contrary to the spirit and intent of the statute. To my mind, milk drawn from healthy animals, including the strippings, is the standard for pure milk. Anything added to or taken therefrom, and exposing the same for sale would be an infraction of the law.

Yours respectfully,

MILTON REMLEY.

CLEANLINESS THE BEST PRESERVATIVE.

No one who is in the business of handling milk to be used for domestic use or for the manufacturing of butter or cheese, should for one moment think of having anything to do with preservatives. There is no compound that can be added to milk which will keep it from souring that will not injure the milk and the health of the consumer. The germs that cause fermentation in milk are there for a purpose and any interference with their action by the use of chemicals makes the milk unhealthy.

These added chemicals will continue to operate after the milk has been taken into the stomach and naturally interfere with normal digestion. The best milk preservative is absolute cleanliness. Start with the milk pails and cans and keep them scrupulously clean. Use a scrubbing brush, and remove all particles of casein and germs from the seams and crevices, finishing with scalding water or steam, wipe dry and place in the sun. The milking stables should be kept dry, clean, and fermenting material of all kinds should not be kept in or near the barn; it should have plenty of sunlight and fresh air. The cows should be kept clean, free from manure and other filth. The cow is a greater producer of wealth than the horse, and deserves, and the interest of the dairyman requires, that her bodily comfort be as well looked after as that of the horse. She should be cleaned daily and her home kept free from all infection. The milker should be personally clean and careful in his work. The milk should be thoroughly strained through at least two thicknesses of cloth, which should be frequently washed during the process of straining if the quantity of milk is large. Immediately after milking the animal heat should be removed from the milk by placing the milk in a tank of cold water which should be changed as often as necessary. The stirring of the milk while the temperature is being reduced to 50° or 60°, the lower the better, is essential. No one has any right or business to be engaged in the handling of milk unless they are willing to carry out such details as are set out in this article, and if they do properly attend to these matters as is here indicated, they need not have use for preservative of any kind.

FOOD ADULTERATION.

The question of the adulteration of foods, drugs and articles of drink has been agitating the public mind to an unusual extent during the past year, and the passage of a law by the coming legislature, placing the inspection of such articles in the hands of the state dairy commissioner is asked for, and we have been requested to co-operate in securing the same. The Iowa State Grange at its last meeting adopted the following resolution:

WHEREAS, We believe the adulteration of foods and drugs has reached an alarming extent, and has become not only a fraud that robs but also a crime that kills, and

WHEREAS, Ohio and other states are adopting stringent laws for the protection of their citizens, thereby driving from their markets impure and poisonous compounds which are no doubt being distributed through the various states having no such laws, Iowa among the rest, therefore, be it

Resolved, That we, the delegates in attendance upon the Iowa State Grange assembled in the city of Des Moines, this, the 9th day of October, 1895, do most earnestly protest against the practice of adulterating our foods and drugs.

Resolved, That we invite the co-operation of the dairy commissioner of our state, as well as the general assembly, in an effort to secure and enforce the enactment of such laws the coming session as will prohibit the nefarious practice, and thereby protect our people in their material prosperity and at the same time promote the public health.

The duties pertaining to this office and the work performed by the force of the department has occupied our entire time and many extra hours have been required to do what the commissioner thought necessary to be done. Not having had the necessary time to devote to the study of the subject of food adulterations, so as to present much information on the subject, requests were made to L. H. Pammel, professor of botany, and J. B. Weems, professor of chemistry in the Iowa Agricultural college to give some facts and figures as would be of interest to the people and law-makers of the state.

WHOLESOME AND PURE FOODS.

BY L. H. PAMMEL.

Every consumer recognizes the importance of pure and wholesome food, as is evidenced by the laws passed by our national government, and various states and foreign countries for the detection of adulterated products. Many states have only legislated on imitation products of butter, while some have not done so much as to pass a single law on the subject. It is not my purpose to discuss the question of pure foods along dairy lines or other animal products, but to confine my attention to questions that pertain more particularly to botanical work.

It is a well recognized fact that hundreds of articles in daily use in this country and in Europe are adulterated; not only of foods but articles of clothing, drugs, seeds, etc. This has been carried on so extensively in nearly all civilized countries that the various governments of Europe have long since established special laboratories where these adulterations are studied, and the vendors of these articles are punished. The state of Iowa should speedily pass laws governing these adulterations.

Mr. Alexander J. Wedderburn* of the United States Department of agriculture, states that almost every article of food and drug used in the United States is adulterated to a greater or less extent as proved by the investigations of the department. Coroners' inquests from all parts of the country testify abundantly to the pernicious use of adulterated products. Mr. Wedderburn says, "from data at hand, that the extent of adulteration is not less than 15 per cent, and he is still convinced that this is rather below than above the mark. Of this amount probably only 2 per cent is of an injurious character to health, but when we remember that to furnish 65,000,000 people with food, drink and drugs costs not less than \$6,700,000,000 (allowing the average cost per capita to be only \$2 per week), we find by calculation that the amount of adulteration reaches the immense sum of \$1,014,000,000 annually, and as the population increases each year so will increase this constant drain upon the resources of the people. It may be said that a large proportion of this is simply a deterioration, and that the purchaser gets value for his money, and is benefited by the reduced price. Were this true the loss still falls upon the producer of the genuine article, and it must be recollected that at least 2 per cent of the whole is of a character deleterious to health, which amounts to the sum of \$135,200,000 as the annual amount paid by the American people for having their lives taken or their health injured."

*Report on the extent and character of food and drug adulteration, Bulletin No. 41, division of chemistry, U. S. Dept. of Agr., 1894, p. —

These figures are of course estimated from reports sent to the department of agriculture, and so far as estimates go are sufficiently reliable.

Perhaps it will be best to discuss this question under the following topics: Flour; spices and condiments; tea, coffee and cocoa preparations; canned vegetables.

Flour.—Owing to the cheapness of flour the causes for adulteration at present are not so manifest as when the price is higher. Occasionally wheat flour contains rye, and *vice versa*. One of the most frequent adulterations in the state is the addition of wheat or rye flour to buckwheat. Several samples having been submitted to me show undoubted evidences of this kind of adulteration. Still another is the addition of small earthy matters to give weight.

Spices and Condiments.—These substances are not directly used as food, but for the purpose of rendering food more palatable. As these substances are generally sold in a ground condition, and since they are readily imitated by other products, much adulteration is practiced. Several spices submitted to me from a local dealer show that this is carried on to a large extent. In Canada the public analyst makes the following statement with reference to mustard: "Fifty samples of mustard were examined and many of these were properly sold as 'compound,' or mixtures; but one of the worst samples was sold with a label guaranteeing it to be 'ground from finest English seed, and free from adulteration.' Of the fifty samples only nine were genuine." The state of New York has an excellent law on food adulterants, and Professor Lattimore makes the following report on condiments and spices:

ARTICLES.	Samples examined.	Adulterated.	Percentage of adulterations.
Mustard.....	18	12	66.6
Ginger.....	15	9	60
Allspice.....	15	19	70
Cinnamon.....	15	15	81.8
Cassia.....	15	4	27.1
Cloves.....	15	16	76.2
Pepper.....	40	28	70
Black.....	7	5	71.4
White.....	10	5	50
Red.....	8	4	50
Mace.....	5	4	80
Nutmeg.....	5	4	80

Clifford Richardson classifies the chief adulterants thus far found in spices in this country as follows:

SPICES.	ADULTERANTS.
Allspice ..	Spent cloves, clove stems, cracker dust, ground shells, or charcoal, mineral color, yellow corn.
Cayenne..	Rice flour, salt and ship-stuff, yellow corn, turmeric and mineral red.
Cassia	Ground shells and crackers, turmeric, minerals.
Cinnamon	Cassia, peas, starch, mustard hulls, turmeric, minerals, cracker dust, burnt shells, or charcoal.
Cloves	Spent cloves, clove stems, minerals, allspice, roasted shells, wheat flour and peas.
Ginger	Cereals, turmeric, mustard hulls, cayenne, peas.
Mace.....	Cereals or starch, buckwheat, wild mace.
Nutmegs..	Cereals or starch, wild nutmeg.
Pepper....	Refuse of salt acts, pepper dust, ground crackers, ship-stuff, rice, mustard hulls, charcoal, coconut shells, cayenne, beans, bran, yellow corn.
Mustard ..	Cereals and starch, turmeric, peas, yellow cornmeal, ginger, gypsum.

Teas, Coffee and Cocoa.—Teas are faced with Prussian blue, turmeric, indigo or plumbago to give them color or gloss. To detect exhausted leaves it is necessary to make a chemical analysis. Much tea of this kind is used. Tea is very frequently adulterated with foreign leaves, and this is best done by making a microscopic examination. The leaves used are elm, horsechestnut, plum, ash, willow, poplar, oak, Misouri currant, birch, or New Jersey tea; particles of sand, copper or gypsum are also added. American teas are not adulterated so extensively with foreign leaves as formerly because the United States law on the adulteration of tea is well enforced.

Coffee.—Ground coffee is especially adulterated with various substitutes, such as chicory. Different kinds of coffee vary in color, and the cheaper grades are colored to imitate the better grades. Cheaper grades are colored to imitate Java. Facing or coloring is also practiced on damaged coffee. For this purpose mixtures of indigo, lead chromate, coal and clay are used. One of the most common adulterants is chicory, the root of a plant belonging to the sunflower family. It is cheaply produced. Marigold roots are also used. Roasted peanuts, acorns and other plants are widely used. Some of these substitutes have been widely advertised, but none of them can replace coffee. One other fraud has been perpetrated on the public, namely, the manufacture of imitation coffee. Here is a circular letter from one of the dealers:

"DEAR SIR—I send you by this mail a sample of 'imitation coffee.' This is a manufactured bean, composed of flour. You can easily mix 15 per cent of this substitute in with genuine coffee that ranges in price from 20 to 22 cents, and it will improve the flavor of the same; it granulates the same as coffee. If you deal with us it will be in the most strict confidence."

Cocoa.—Owing to the conditions under which cocoa is sold it is one of the most easily adulterated.

Canned Goods.—The canning of vegetables has become an important industry, and vegetables, if properly preserved, are wholesome. It is, however, a most serious matter from a health standpoint that preservatives should be used. Heating destroys bacteria, and when a preservative is added it endeavors to accomplish the same object. If these substances are injurious to organisms it no doubt acts on the digestive organs, impairs the digestive functions. Copper and zinc are used to add attractiveness to the fruit. The subject is so important from the standpoint of health that the state should enact legislation to adequately protect the consumers.

THE ADULTERATION OF FOOD.

BY J. B. WEEMS.

The adulteration of food is, to a certain extent, the result of competition and of dishonest individuals who try to meet this competition by fraudulent means. In the past history of this subject we find that there has been always a certain class of individuals whose occupation has been to impose upon their fellow men by such practices.

In the beginning of this practice the number of substances which were subjected to adulteration was small, but at the present time it is not very difficult to find any article adulterated which is used for household purposes, provided that there is a profit to those interested in its manufacture, and unfortunately this practice is encouraged to a certain extent by the silence of the purchaser, who, in many cases, looks upon the matter as a result to be expected. However, if one considers the field of adulteration as a whole they soon become impressed with the fact that such a practice is one of the evils which should have attention at the present time. Naturally the older countries have had to meet the question first, and for an example let us consider what the city of Paris is doing in the matter. In the report of the laboratory we find the following interesting facts:

Number of chemists employed.....	27
Number of inspectors employed.....	49
Number of other persons employed in connection with the laboratory.....	8
Total.....	55

The total expense to the city was about \$41,762, and the work performed is seen in the following facts:

Number of substances analyzed.....	10,752
Number of substances found to be adulterated.....	5,395

Connected with the number of adulterated substances the following is of interest:

Number of substances found adulterated which were considered injurious.....	1,514
Number not considered injurious.....	3,880

The above facts speak for themselves, and represent to what an extent foods and other substances are adulterated. In this instance almost one-half of the substances collected were found adulterated, and of this number adulterated almost one-third were considered injurious. With this example of what is being done in other countries, we may consider the United States.

Many of the states have appointed food commissioners whose duty it is to investigate the adulteration of food and other substances, and as these

states increase in number it restricts to a large extent the territory of adulterated substances to those states which do not have food commissioners.

For illustrating the extent to which substances are adulterated in this country take the reports of the food commissioners of Ohio and Michigan, and we find the following results for Ohio present themselves:

Number of substances analyzed in 1893-94.....	409
Number of substances found adulterated.....	229
Number of substances analyzed in 1894-95.....	1,329
Number of substances found adulterated.....	846

Among the adulterated articles were the following: Allspice, aqua ammonia, baking powder, beef, iron and wine, beer, butter, buckwheat flour, beverages, candy, cider, cinnamon, cloves, coffee, cream of tartar, cod liver oil, cheese, condensed milk, catsup, chewing gum, desiccated egg, essence of peppermint, fruit butter, flaxseed, ginger, ginger extract, liquid food, maple syrup, molasses, mustard, milk, mixed spices, olive oil, ointment, pepper, paskola, peas, preservative preserves, pine apple extract, plum pudding, raspberry extract, sugar, sausage, strawberry extract, tea, vinegar wines, etc.

The above list gives an idea of the extent to which food adulteration is practiced. In the list of 846 articles found adulterated in Ohio, there were twenty-five samples of butter, eighty-seven of milk and fifty-nine of vinegar, which impresses the fact that there is a large amount of adulteration of other substances besides those substances which are expected to be found adulterated to a large extent.

In the report of Michigan the following facts are found in connection with food adulteration.

FOR OCTOBER, 1895.	
Number of samples collected.....	42
Number of samples found pure.....	7
FOR NOVEMBER, 1895.	
Number of samples collected.....	50
Number of samples found pure.....	14

The above results are interesting and show the value of the food commission in one of our neighboring states and, perhaps, suggesting the important question, what would be the result of such an investigation in the state of Iowa?

It may be well to consider some of the substances that are used for the adulteration of household articles; for instance, consider baking powder. On the market we find two principle kinds of powder, those made from soda (baking) and cream of tartar, the other from ammonia, alum and soda (baking). Besides the above substances there is used a certain amount of starch as a filler. The following analyses of baking powder give an idea of the composition of the cream of tartar powders:*

ROYAL BAKING POWDER.	Per cent.
Bicarbonate of soda (baking soda).....	25.21
Cream of tartar.....	50.44
Starch.....	15.10
Tartrate of potassium and sodium moisture, etc.....	7.25
Total.....	100.00

*From bulletin 13, U. S. Dept. of Agr., page 578, which is from the results of Prof. H. A. Weber, of Ohio.

DR. PRICE'S BAKING POWDER.

	Per cent.
Bicarbonate of soda (baking soda).....	21.14
Cream of tartar.....	44.90
Starch.....	23.30
Tartrate of potassium and sodium, moisture, etc.....	12.96
Total.....	100.90

CLEVELAND'S BAKING POWDER.

	Per cent.
Bicarbonate of soda.....	26.12
Cream of tartar.....	54.70
Starch.....	9.00
Tartrate of potassium and sodium, moisture, etc.....	10.18
Total.....	100.00

The following analyses give the composition of some of the alum powders:

EMPIRE BAKING POWDER.

	Per cent.
Bicarbonate of soda.....	11.08
Alum.....	10.41
Starch.....	44.25
Hydrate of alumina, sodium sulphate, etc.....	34.26
Total.....	100.00

VETERAN BAKING POWDER.

	Per cent.
Bicarbonate of soda.....	14.65
Alum.....	12.13
Starch.....	49.85
Hydrate of alumina, sodium sulphate, etc.....	23.36
Total.....	100.00

COOK'S FAVORITE BAKING POWDER.

	Per cent.
Bicarbonate of soda.....	11.92
Alum.....	10.41
Starch.....	42.75
Hydrate of alumina, sodium sulphate, etc.....	34.92
Total.....	100.00

In addition to the "cream of tartar" and "alum" baking powder there is another class called the "phosphate" baking powders. The following analysis represents a powder of this class:

HORSFORD'S BAKING POWDER.

	Per cent.
Bicarbonate of soda.....	27.34
Free phosphoric acid.....	14.47
Starch.....	21.80
Calcium phosphate, calcium carbonate, etc.....	19.50
Sodium phosphate, moisture, etc.....	16.89
Total.....	100.00

The subject of alum baking powders has been prominent for a number of years past, and the following is a part of the "summary of the conclusions" of Prof. Mallet regarding this class of baking powders:

"It does not very greatly exceed such quantities as may be derived from bread as commonly used, aluminium hydroxide and phosphate produce, as produced in experiments upon myself, an inhibitory effect upon gastric digestion. This effect is probably a consequence of the fact that a part of the aluminium unites with the acid of the gastric juice, and is taken up

into solution, while at the same time the remainder of the aluminium hydroxide or phosphate throws down in insoluble form the organic substance constituting the peptic ferment.

"Partial precipitation in insoluble form of some of the organic matter of food may probably also be brought about by the presence of the aluminium compounds in question.

"From the general nature of the results obtained the conclusion may fairly be deduced that not only alum itself but the residues which its use in baking powder leaves in bread cannot be viewed as harmless, but must be ranked as objectionable, and should be avoided when the object aimed at is the production of wholesome bread."

The above presents briefly the conclusions of Professor Mallet's experiments in that part relating to the action of alum powders on digestion, and draws attention to the uncertain results which may follow the use of such powders in the household.

Another subject that may be of interest is that of coffee, which has been subjected to adulteration in both the natural and ground condition. For the purpose of adulterating roasted coffee there has been used within the last five or ten years a product manufactured from flour and bran in imitation of not only the roasted coffee bean but the green coffee bean also. The imitation in some cases so closely resembles the natural bean that it requires close observation on the part of the purchaser to detect it. Products of this nature offer opportunities for selling at a large profit a mixture of artificial and pure coffee with little chance of detection. There are several firms in this country engaged in producing products for the adulteration of coffee. Ground coffee is no doubt adulterated to a larger extent than roasted or green coffee, as such substances as roasted peas, chicory, etc., can be readily used for this purpose.

The following analysis taken from Michigan's report for November, 1895, shows the composition of some of the adulterated coffee:

	Per cent.
Coffee.....	70
Chicory.....	20
Peas.....	10

What has been shown regarding the condition of baking powders and coffee may also be applied to tea, honey and many other articles used for household purposes, but no doubt enough has been given to show that the question of food adulteration is one that should be given attention as soon as possible. In connection with food adulteration a few words may be said regarding the use of preservatives in foods. It is very common to have one's attention called to these substances, both by advertisements in our papers and by circulars, which state in glowing colors the value of certain brands of food preservatives and at the same time claiming that these substances are harmless. It may be well to state that most of these articles generally consist of a mixture of two or three common substances sold at a price many times the actual value of the compound.

Regarding the action of such substances upon the digestive organs the following may be of interest.*

"Opinions are divided in regard to the wholesomeness or unwholesomeness of these added preservatives, the great weight of testimony being to

* Bulletin 13 U. S. Dept. of Ag. Div. of Chem. p. 1016.

the effect that while these bodies in small quantities are not injurious to health, yet the continual use of them, even in such small quantities may finally become prejudicial. It is also shown that the same quantities which enable these preservatives to prevent the action of micro-organisms and thus preserve the food from decay, are also active in the digestive organs and hinder the normal functions of the digestive ferments. In other words, the forces which tend to preserve in this way the vegetables from decay also tend in like manner to retard the processes of digestion," from which we can readily conclude that there is in addition to the field of food adulteration, properly speaking, another field which should consider the use of food preservatives.

In conclusion it may be said that in order to insure the purity of food it is necessary to have a good food law and an appropriation large enough to enable the commissioner to carry out the law to its full extent, but in connection with these there should be an active interest manifested by the public in the matter so that the necessary support be given to aid the commissioner in his work.

ACTION TAKEN BY OTHER STATES.

These articles show the importance of this advance step which we think should be taken. People move slowly in all matters of reform, but it does seem that the time has come for a forward movement in this direction. Many of our surrounding states have laws of this nature for the protection of their people. The officers in whose hands the enforcement of these laws has been placed have been absolutely astonished at the extent of the practice of adulterating. In the state of Ohio as high as 83 per cent of the samples collected by inspectors were found to be adulterated. The dairy and food commissioner of the state of Ohio in his last report says: "The legislators from almost every state in the union have sought our reports and laws for the purpose of inaugurating like departments in their own state governments." This is fair warning to our law-makers that Iowa will soon be made, if it is not already, a dumping ground for all kinds of fraud in the food, drug, and drink line. This department realizes the immense amount of work required to properly enforce laws of this nature in a state the size of Iowa. In other states it is being successfully done, and can be in Iowa. To accomplish this will necessitate the employment of more help, both in the field and in the office, the employment of a state chemist and microscopist, and

as many inspectors as the experience of the department will find to be necessary to cover all parts of the state. We are not in favor of crippling the work in the dairy line that is now being done, or that we recommend should be done, in order to inaugurate this new work. Work of this kind is of slow growth, and no backward steps should be taken. Iowa is foremost in the line of city milk inspection, and in all other dairy work is well up abreast of the times. This is as it should be. There is no necessity for any conflict, and with an appropriation such as the importance of the subject demands, this department can take care of the dairy side, organize the pure food work, and no doubt obtain results that would be satisfactory to our people.

W. K. BOARDMAN,
Iowa State Dairy Commissioner.

IOWA STATE DAIRY LAWS.

MILK LAW.

CHAPTER 50, LAWS TWENTY-FOURTH GENERAL ASSEMBLY.

AN ACT to repeal section 4042 of the code of 1873 and provide a substitute therefor, and to enlarge the duties and powers of the state dairy commissioner, and to provide an appropriation therefor.

Be it enacted by the General Assembly of the State of Iowa:

SECTION 1. IMPURE MILK—PENALTY FOR VIOLATION.—That section 4042 of the code of 1873 is hereby repealed and the following is enacted in lieu thereof: If any person or corporation shall sell or exchange, or expose for sale or exchange, deliver or bring to another for domestic use, or to be converted into any product of human food whatsoever, any unclean, impure, unhealthy, adulterated, unwholesome or skimmed milk, or milk from which has been held back what is commonly known as strippings, or milk taken from an animal having disease, sickness, ulcers, abscesses or running sore, or was taken from an animal fifteen days before, or less than five days after parturition, shall upon conviction thereof be fined not less than twenty-five dollars (\$25.00) nor more than one hundred dollars (\$100.00), and be liable in double the amount of damages to the person or persons upon whom such fraud shall be committed. *Provided*, That the provisions of this act shall not apply to skimmed milk when sold as such.

SEC. 2. SKIMMED MILK DEFINED.—For the purposes of this act milk which is proved by any reliable method of test or analysis, to contain less than three pounds of butter fat to the one hundred pounds of milk, shall be regarded as skimmed or partially skimmed milk.

SEC. 3. ENFORCEMENT.—It is hereby made the duty of the dairy commissioner to enforce the provisions of the foregoing sections.

SEC. 4. MILK AGENTS' COMPENSATION.—The state dairy commissioner is hereby authorized to appoint agents in every city having over ten thousand inhabitants, in the state of Iowa, who are to collect the samples of milk as sold in such cities, and it shall be their duty to forward such samples to the office of the commissioner in Des Moines in such manner as he shall direct. The compensation of such agents at any one time, shall not be more than three dollars (\$3.00) for collecting and delivering the same to the express companies.

SEC. 5. NUMBER OF COLLECTIONS.—The number of times samples are collected in each city of more than ten thousand inhabitants shall not exceed an average of thirty times during any one year.

SEC. 6. CLERKS' HIRE INCREASED.—The state dairy commissioner, if it shall be found necessary, may increase the clerk hire of his office twenty-five dollars (\$25.00) per month.

SEC. 7. MILK DEALERS' PERMIT—PENALTY FOR VIOLATION.—Every milk dealer who runs a milk wagon, milk depot, or sells milk from a store, in the cities that have over ten thousand inhabitants, in the state of Iowa, shall obtain a permit from the state dairy commissioner's office, for which he shall pay the sum of one dollar (\$1) annually. The commissioner shall keep a book in which shall be registered the name, location and number of each dealer in milk, and a record of each analysis. Whoever violates the provisions of this section, upon conviction thereof, shall be fined not less than ten dollars (\$10) nor more than twenty-five dollars (\$25).

SEC. 8. POWER TO TAKE AND INSPECT.—The dairy commissioner or his agents shall have power and authority to open any can or vessel containing milk which is offered for sale, and may inspect the contents thereof and may take therefrom samples of milk for analysis.

SEC. 9. APPROPRIATION.—That there is hereby appropriated out of any money in the state treasury, not otherwise appropriated, the sum of twenty-five hundred dollars, or so much as may be necessary for the purpose of carrying out the provisions of this act

Approved April 8, 1892.

CHAPTER 46, LAWS TWENTY-FIFTH GENERAL ASSEMBLY.

A LAW prohibiting the manufacture, sale and use of any imitation butter and cheese, and regulating the manufacture, sale and use of substitutes for butter and cheese not having a yellow color.

AN ACT to repeal sections 1, 2, 3, 4, 5, 8, 10 and 15 of chapter 52 of the acts of the Twenty-first General Assembly, and to repeal section 6 of chapter 52 of the acts of the Twenty-first General Assembly as amended by senate file No. 51 of the Twenty-fifth General Assembly, and approved February 12, 1894, and to enact substitutes therefor; to prohibit the manufacture, sale, keeping for sale and fraudulent use of substances designed as imitation butter and cheese, and to regulate the manufacture, sale and keeping for sale of any substance designed to be used as a substitute for butter and cheese.

Be it enacted by the General Assembly of the State of Iowa:

SECTION 1. LAWS REPEALED.—That sections 1, 2, 3, 4, 5, 8, 10 and 15 of chapter 52 of the acts of the Twenty-first General Assembly, and section 6 of chapter 52 of the acts of the Twenty-first General Assembly as amended by senate file No. 51 of the Twenty-fifth General Assembly, and approved February 12, 1894, are hereby repealed and the following enacted in lieu thereof.

SEC. 2. DEFINING IMITATION BUTTER AND CHEESE.—That for the purpose of this act every article, substitute or compound, other than that produced from pure milk or cream from the same, made in the semblance of butter and designed to be used as a substitute for butter made from pure milk or cream from the same, is hereby declared to be imitation butter; and that for the purpose of this act every article, substance or compound other than that produced from pure milk or cream from the same, made in

the semblance of cheese and designed to be used as a substitute for cheese made from pure milk or cream from the same, is hereby declared to be imitation cheese; *provided*, that the use of salt, rennet and harmless coloring matter for coloring the product of pure milk or cream shall not be construed to render such product an imitation.

SEC. 3. PROHIBITING THE COLORING YELLOW OF SUBSTITUTES FOR BUTTER OR CHEESE.—No person shall coat, powder or color with annatto or any coloring matter whatever, any substance designed as a substitute for butter or cheese, whereby such substitute or product so colored or compounded shall be made to resemble butter or cheese, the product of the dairy.

No person shall combine any animal fat or vegetable oil or other substance with butter or cheese, or combine therewith or with animal fat or vegetable oil or combination of the two or with either one or with any substance or substances whatever, any annatto or compound of the same, or any other substance or substances, for the purpose or with the effect of imparting thereto a yellow color or any shade of yellow, so that such substitute shall resemble yellow or any shade of genuine yellow butter or cheese, nor introduce any such coloring matter or such substance or substances into any of the articles of which the same is composed. *Provided*, nothing in this act shall be construed to prohibit the use of salt, rennet and harmless coloring matter for coloring the products of pure milk or cream from the same.

No person shall by himself, his agent or employe, produce or manufacture any substance in imitation or semblance of natural butter or cheese, nor sell, nor keep for sale, nor offer for sale, any imitation butter or cheese made or manufactured, compounded or produced in violation of this section, whether such imitation butter or cheese shall be made or produced in this state or elsewhere.

This section shall not be construed to prohibit the manufacture and sale, under the regulations hereinafter provided of substances designed to be used as a substitute for butter or cheese and not manufactured or colored as herein prohibited.

SEC. 4. LAWFUL SUBSTITUTES—HOW MARKED.—Every person who lawfully manufactures any substance designed to be used as a substitute for butter or cheese shall mark by branding, stamping or stenciling upon the top and side of each tub, firkin, box, or other package in which such article shall be kept and in which it shall be removed from the place where it is produced, in a clean and durable manner, in the English language, the words, "substitute for butter" or "substitute for cheese," as the case may be, in printed letters, in plain Roman type, each of which shall not be less than one inch in length by one-half inch in width.

SEC. 5. SHIPPING.—No person, by himself or another, shall ship, consign or forward by any common carrier, whether public or private, any substance designed to be used as a substitute for butter or cheese, and no carrier shall knowingly receive the same for the purpose of forwarding or transporting unless it shall be manufactured and marked as provided in the preceding sections of this act, and unless it be consigned by the carrier and receipted for by its true name; *provided*, that this act shall not apply to any goods in transit between foreign states across the state of Iowa.

SEC. 6. HAVING IN POSSESSION.—No person shall have in his possession or under his control, any substance designed to be used as a substitute for butter and cheese unless the tub, firkin, box, or other package containing the same be clearly and durably marked as provided by section 4 of this act; *provided*, that this section shall not be deemed to apply to persons who have the same in their possession for the actual consumption of themselves or family.

Every person having in possession or control of any substance designed to be used as a substitute for butter or cheese which is not marked as required by the provisions of this act, shall be presumed to have known during the time of such possession or control the true character and name, as fixed by this act, of such product.

SEC. 7. SELLING.—No person by himself, or another, shall sell, or offer for sale, any substance designed to be used for a substitute for butter or cheese under the name of, or under the pretense that the same is butter or cheese; and no person by himself or another shall sell any substance designed to be used as a substitute for butter or cheese, unless he shall inform the purchaser distinctly at the time of the sale that the same is a substitute for butter or cheese, as the case may be, and shall deliver to the purchaser at the time of the sale a statement clearly printed in the English language, which shall refer to the article sold, and which shall contain in prominent and plain Roman type a statement that the substance so sold is a substitute for butter or cheese, as the case may be, and such statement shall also give the name and place of business of the maker.

SEC. 8. HOTELS; EATING HOUSES; PLACARD—PENALTY FOR VIOLATION.—No keeper or proprietor of any bakery, hotel, boarding house, restaurant, saloon, lunch counter or place of public entertainment, or any person having charge thereof or employed thereat, or any person furnishing board for others than members of his own family, or for any employe where such board is furnished for a compensation or as a part of the compensation of any such employe shall keep, use or serve therein either as food for his guests, boarders, patrons, customers or employes, or for cooking purposes, any imitation butter or cheese as defined in section 2 of this act, and in using or serving any substance designed as a substitute for butter or cheese as herein defined, he or they shall display and keep posted a card opposite each table in a conspicuous place where the same may be easily seen and read in the dining room, lunch room, restaurant, bakery, hotel, boarding house, saloon or place of public entertainment, and place where such substance designed as a substitute is sold, used or disposed of, which card shall be white and in size not less than ten by fourteen inches; upon which shall be printed in plain black, Roman letters not less in size than one inch in length and one-half inch in width the words "substitute for butter used here," or "substitute for cheese used here," as the case may be, and said cards shall not contain any other words than the ones above prescribed. Any person or persons violating the provisions of this section shall, upon conviction thereof, be punished by a fine of not less than twenty-five dollars, nor over one hundred dollars, or by imprisonment in the county jail for not over thirty days.

SEC. 9. PENALTY FOR VIOLATION.—Whoever shall violate any of the provisions of section 3, 4, 5, 6 or 7, of this act shall, for the first offense, be

punished by a fine not less than fifty dollars, nor more than one hundred dollars, or by imprisonment not exceeding thirty days; and for each subsequent offense, by a fine of not less than two hundred and fifty dollars nor more than five hundred dollars, or by imprisonment in the county jail not less than thirty days nor more than six months, or by both fine and imprisonment, in the discretion of the court.

SEC. 10. POSSESSION CONSTRUED; SEIZURES.—Whoever shall have possession or control of any imitation butter or imitation cheese, or any substance designed to be used as a substitute for butter or cheese contrary to the provisions of this act, shall be construed to have possession of property with intent to use it as a means of committing a public offense within the meaning of chapter 50, of title 25, of the code; *provided*, that it shall be the duty of the officer who serves a search warrant issued for imitation butter or imitation cheese, or any substance designed to be used as a substitute for butter or cheese, to deliver to the state dairy commissioner, or to any person by such commissioner authorized in writing to receive the same, a perfect sample of each article seized by virtue of such warrant, for the purpose of having the same analyzed, and forthwith to return to the person from whom it was taken, the remainder of each article seized as aforesaid. If any sample be found to be imitation butter or imitation cheese, or substance designed to be used as a substitute for butter or cheese, it shall be returned to and retained by the magistrate as and for the purpose contemplated by section 4648 of the code, but if any sample be found not to be imitation butter or imitation cheese, or a substance designed to be used as a substitute for butter or cheese, it shall be returned forthwith to the person from whom it was taken.

Approved April 24, 1894.

UNREPEALED SECTIONS OF CHAPTER 52, LAWS TWENTY-FIRST GENERAL ASSEMBLY.

SECTION 7. NO ACTION ON CONTRACT.—No action can be maintained on account of any sale or other contract made in violation of or with intent to violate this act by or through any person who was knowingly a party to such wrongful sale or other contract.

SEC. 9. DEFACING OR REMOVING MARKS.—Whoever shall deface, erase, cancel or remove any mark provided for by this act, with intent to mislead, deceive, or to violate any of the provisions of this act shall be deemed guilty of a misdemeanor.

SEC. 11. APPOINTMENT OF DAIRY COMMISSIONER.—The governor shall, on or before the first day of April of each even-numbered year, appoint an officer, who shall be known as the Iowa state dairy commissioner, who shall have practical experience in the manufacture of dairy products, and who shall hold his office for the term of two years from the first day of May following his appointment, or until his successor is appointed and qualified. Said commissioner shall give an official bond conditioned for the faithful performance of the duties of his office in the sum of ten thousand dollars, with sureties to be approved by the governor. He may be removed from office by the governor, with the approval of the executive council, for

neglect or violation of duty. Any vacancy shall be filled by the appointment of the governor by and with the advice and consent of the executive council.

SEC. 12. SALARY; OFFICE; CLERK.—The state dairy commissioner shall receive a salary of fifteen hundred dollars per annum, payable monthly, and the expenses necessarily incurred in the proper discharge of the duties of his office; *provided*, that a complete itemized statement of all expenses shall be kept by the commissioner, and by him filed with the auditor of state after having been duly verified by him before receiving the same. He shall be furnished a room in the agricultural department of the capitol at Des Moines, in which he shall keep his office and all correspondence, documents, records and property of the state pertaining thereto, all of which shall be turned over to his successor in office. He may, if it is found to be necessary, employ a clerk, whose salary shall not exceed the sum of fifty dollars per month. Said salaries and expenses to be paid from the appropriation provided for in section 17 of this act. The commissioner provided for by this act shall hold no other official position under the laws of Iowa or a professorship in any of the state institutions.

SEC. 13. DUTIES; REPORTS.—It shall be the duty of the state dairy commissioner to secure, so far as possible, the enforcement of this act. He shall collect, arrange and present in annual reports to the governor on or before the first day of November of each year, a detailed statement of all matters relating to the purposes of this act, which he shall deem of public importance, including the receipts and disbursements of this office. Such report shall be published with the report of the state agricultural society.

SEC. 14. SECURING EVIDENCE.—The state dairy commissioner shall have power in all cases where he shall deem it important for the discharge of the duties of his office, to administer oaths, to issue subpoenas for witnesses and to examine them under oath, and to enforce their attendance to the same extent and in the same manner as a justice of the peace may now do, and such witnesses shall be paid by the commissioner the same fees now allowed witnesses in justices' courts.

SEC. 16. PROSECUTION; COST.—It shall be the duty of the court in each action for the violation of this act to tax as cost in the cause, the actual and necessary expense of analyzing the alleged imitation butter or imitation cheese which shall be in controversy in such proceedings; *provided* that the amounts so taxed shall not exceed the sum of twenty-five dollars. It shall be the duty of the district or county attorney, upon the application of the dairy commissioner, to attend to the prosecution in the name of the state of any suit brought for violation of any of the provisions of this act within his district, and in case of conviction he shall receive twenty-five per cent of the fines collected, which shall be in addition to any salary he may receive, to be taxed as costs in the case.

SEC. 17. APPROPRIATION.—That the unexpended portion of the appropriation provided for by section 17 of the 52d chapter of the acts of the Twenty-first General Assembly, is hereby appropriated for the next biennial period, or so much thereof as may be necessary for the proper carrying out of the purpose of the act; but not more than one-half of said unexpended balance shall be drawn from the state treasury prior to the first day of May, 1895. The amount hereby appropriated shall be expended only

under the direction and with the approval of the executive council. And all salaries, fees, costs, and expenses of every kind incurred in the carrying out of this law shall be drawn from the sum so appropriated.

SEC. 18. Chapter 39 of the acts of the Eighteenth Genesal Assembly of Iowa, and all acts and parts of acts in conflict with this act, are hereby repealed.

SEC. 19. This act being deemed of immediate importance shall take effect and be in force from and after its publication in the Iowa State Register and Iowa Homestead, newspapers published in Des Moines, Iowa.

Approved March 27, 1886.

Amendments approved March 28, 1888.

MILK TESTING LAW.

CHAPTER 47, LAWS TWENTY-FIFTH GENERAL ASSEMBLY.

AN ACT to regulate the testing of milk.

Be it enacted by the General Assembly of the State of Iowa:

SECTION 1. ACCURATE TESTS; PROCURE TEST BOTTLES; BURDEN OF PROOF; PENALTY FOR VIOLATION.—Any person by himself or agents, servants or employes, or any corporation, its agents, servants or employes who shall operate a creamery, cheese factory, or condensed milk factory in this state, and who shall use a chemical milk test for the purpose of determining the quantity of butter fat in milk purchased or received from the patrons of such creamery, cheese factory, or condensed milk factory, is hereby required to use reliable and accurate tests, and no such tests shall be considered reliable and accurate, unless the same shall be clear off and free from any foreign substance, and produce such measurements of butter fat as would result from the use of a standard Babcock milk tester. And every such person or corporation so engaged, and who shall use a chemical milk test, as aforesaid, is hereby required to procure from the state dairy commissioner's office one standard tube or bottle for testing milk, which shall be certified and marked, as provided in section 2 hereof, and which said test tube or bottle, so certified and marked as aforesaid, shall be kept for the inspection of such patrons and for the purpose of verifying the tests so used by such person or corporation.

And in any cause of action in any court, arising between such person, corporation or factory and a patron thereof, the burden of proving such milk test to be reliable and accurate shall be upon such person, corporation or factory, and he shall show or establish that the test by him made, and the results therefrom, correspond with or are equivalent to the measurement of the butter fat which would result from the use of the standard Babcock milk tester.

Any person operating such creamery or factory, as aforesaid, or any agent, servant or employe of such person, or of any such corporation so engaged who shall violate the provisions of this section, shall be deemed

guilty of a misdemeanor, and upon conviction thereof, shall be punished, by a fine of not less than \$50, nor more than \$100, or by imprisonment in the county jail not more than thirty days.

SEC. 2 DUTIES OF DAIRY COMMISSIONER.—It is hereby made the duty of the state dairy commissioner to keep on hand a supply of standard Babcock test tubes or bottles for testing milk, and he shall furnish to any person or corporation desiring the same, one such tube or bottle, and upon request shall certify the same to be accurate, reliable and standard, and shall place thereon the letters "D. C." as a permanent mark thereon, such tube or bottle so furnished to be at the actual cost thereof.

SEC. 3. This act being deemed of immediate importance shall take effect and be in force from and after its publication in the Iowa State Register and Des Moines Leader, newspapers published in Des Moines, Iowa.

Approved April 24, 1894.

CHAPTER 155, LAWS TWENTY-FIFTH GENERAL ASSEMBLY. APPROPRIATION LAW.

AN ACT providing an appropriation for conducting the office of the state dairy commissioner, and for paying the expenses thereof.

Be it enacted by the General Assembly of the State of Iowa:

SECTION 1. That the unexpended portions of the appropriation provided by section 1, chapter 99 of the laws of the Twenty-fourth General Assembly, and by section 9, chapter 50 of the laws of the Twenty-fourth General Assembly, is hereby appropriated for the next biennial period, and there is further appropriated the sum of \$10,000 of any money in the treasury not otherwise appropriated, or as much thereof as may be necessary, for the proper carrying out of the purposes of the acts establishing this commission, but not more than one-half of the amount herein appropriated shall be drawn from the state treasury prior to the first day of May, 1895; the amount hereby appropriated shall be expended only under the direction and approval of the executive council.

Approved April 24, 1894.

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