

TWELFTH ANNUAL REPORT

OF THE

STATE DAIRY COMMISSIONER

TO THE

GOVERNOR OF THE STATE OF IOWA.

FOR THE YEAR 1898.

B. P. NORTON,

State Dairy Commissioner.

PRINTED BY ORDER OF THE GENERAL ASSEMBLY.

DES MOINES:
F. R. CONAWAY, STATE PRINTER,
1899.

LETTER OF TRANSMITTAL.

To His Excellency, Leslie M. Shaw, Governor of Iowa:

SIR—In compliance with the law, I have the honor to submit herewith the Twelfth Annual Report of the Department of the Dairy Commissioner for the year ending October 31, 1898.

Very respectfully,

B. P. NORTON,
Dairy Commissioner.

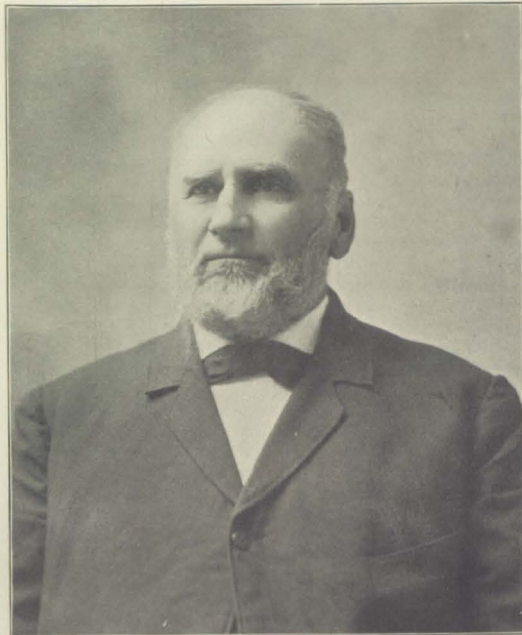
LEVI S. GATES.

The sudden and unexpected death of the Hon. L. S. Gates, October 11, 1898, came upon his many friends as a very great shock. While speaking before a dairymen's convention on the exposition grounds at Omaha, he was stricken with complete heart failure and expired at once.

A native of Ohio, he came to Iowa in 1850 and made his home in Delaware county. He was married May 31, 1860, to Mary L. Jones, who with one son and three grandchildren mourn the loss of husband and father. His genial, generous, cheerful nature endeared him to all, and his well known integrity and excellent judgment insured for him the hearty respect of his large circle of acquaintances.

Mr. Gates was active in all that promised to benefit the community in which he lived, and came to represent the progressive and successful farmer element in his county. He was a pioneer in the creamery industry of this state. The first creamery in the state was established near his farm, and he was an enthusiastic patron of it from the first and its manager for a number of years. As president of the Delaware County Agricultural society, he did good service for the farming interests of his community and the state. He was largely instrumental in forming the State Dairymen's association in 1875, and was its president in 1888 when the state and national associations met in joint session in Manchester. As a member of the Twenty-first General Assembly, he was in charge of the bill for a law creating the office of Dairy Commissioner. His appointment to the office he had helped to create was but a fitting sequel to his long experience as a practical dairyman and successful creamery manager. He believed in the dairy business as a safe and sure road to wealth for the Iowa farmer, and he gave the best efforts of his life to the advancement of the industry. He became dairy commissioner May 1, 1895, and died in the midst of his plans for an active and aggressive campaign of work for further development of the dairy interests of the state. His "Practical Suggestions in Dairy and Creamery Management," issued in pamphlet form in connection with the dairy laws, excited extensive and very favorable comment.

A man of irreproachable character and honesty of purpose, a public official of unexcelled judgment and efficiency, a friend and counselor to all his associates, working always for the good of his community and state, an upright and exemplary citizen, his loss is not to his family alone but to the whole state.



HON. L. S. GATES.

REPORT.

PRACTICAL SUGGESTIONS IN DAIRY AND CREAM- ERY MANAGEMENT.

1. It is a good thing to know how to do, but it is a far better thing to do as well as we know.
2. Each dairyman should strive to produce the best and sweetest of milk, then see to it himself that it is delivered to the factory in the best possible condition.
3. Let each patron support his own creamery and do all in his power to make it successful. A successful and paying creamery business can hardly be built up without the patron and the manufacturer working in unison.
4. Own and milk good cows. If you have poor ones, send them to the butcher.
5. Never use or sell milk from diseased or unhealthy cows. It is dangerous even to feed it to the pigs.
6. Keep the cow warm and dry.
7. Feed clean, bright food in variety to produce good results.
8. Do not allow a cow to drink water you would not drink yourself.
9. Keep the cow clean by using plenty of clean, bright bedding.
10. Milk with clean, dry hands, and as quickly as possible.
11. Strain milk through cloth thick enough to retain any particles of dust or litter that may be in it.
12. It takes as much muscle to milk one hard milking cow as it does to milk four or five easy milkers. Sell her.
13. Treat cows quietly and kindly; excitement affects the quantity and quality of milk.
14. Remember when filling cans with skimmed milk at the creamery, that it is not always the other fellow that needs watching.
15. The cornstalk, either shredded or in ensilage, is one of the best feeds for the cow. Hundreds of thousands of dollars' worth of this feed are annually lost in Iowa.
16. In freezing weather, scald can covers just before starting the milk for the factory. Then cream will not stick and freeze in them. Also cover cans.

17. Wish you would write me what the cash value of skimmed milk or whey is to you as returned from the creamery or cheese factory.

CARE OF CANS.

1. Rinse cans in cold water, thoroughly wash in warm water, scald with boiling water and turn over stake in the sun.

2. Set milk in tank of cold water in summer and stir with long-handled dipper. This will eliminate animal odors and add to your test account. Also aerate morning's milk. Leave covers so that vapors can escape.

3. Important: In winter keep milk out of house and out of barn over night. Build place to keep it where no bad odors will penetrate.

4. Do not mix night and morning milk.

5. Fill cans full, so the milk will not churn on the road to the factory.

6. Put no milk in old, rusty milk cans.

7. A load of bright, clean cans, filled with clean, sweet milk, makes the creamery manager happy.

THE TEST.

1. There is no question that the Babcock principle for measuring the worth of milk for butter-making is correct when properly applied.

2. Take no milk into your weigh can that is not in good order.

3. Stir the milk thoroughly before dipping for sample.

4. See that you have an accurate machine, and that bottles used have been tested by D. C. bottle. Also important that you have D. C. pipette.

5. Be careful to have acid of standard strength.

6. Have acid and milk of the same temperature.

7. Ascertain the rapidity at which your machine should run to make accurate measurements.

8. Keep samples warm until your reading is complete.

9. As soon as the test is taken record it and post where any patron can see it.

10. The test is to teach the patron what his milk is worth for butter-making as well as to show the creamery what it can afford to pay for it.

TO THE MANAGER.

1. The butter-maker and the cheese-maker are the men who handle the product that makes the money for the people of this state; easily \$15,000,000 in the last year.

2. Give the butter-maker your support and an occasional word of encouragement. He has many and queer things to contend with, and sees too much of the bad side of human nature to thoroughly enjoy life.

3. Give him good machinery and improved apparatus, and he is very likely to take good care of it.

4. Important: Be sure you have good drainage for your creamery or cheese factory. The odor that sometimes comes from the factory prejudices the consumer against your product.

5. Pump all separated milk and butter milk into clean galvanized iron or tin tanks.

6. Wash and scald tank each day.

7. Never water separated milk to make it hold out, but rather see to it that each patron has the amount of milk to which he is entitled.

8. Separated milk is of value to the farmer when returned to him in good order.

9. The manager that treats his patrons in such a manner that he receives their confidence is on the direct road to success.

10. Treat the chronic kicker as fairly as the best patron. It is hard, but you should do it.

11. If possible secure the services of a good butter-maker. It pays.

12. Stand by your butter-maker. Allow no one to browbeat him and continually harass him. It warps his judgment and dulls his ability.

13. Put all products in neat, clean packages.

14. Ship only to responsible parties.

15. It is the part of good management to pay and balance all accounts each month.

16. Never be persuaded to pay more for milk than you receive for butter for the month, after all expenses are paid. The temptation is sometimes very great.

17. Never ask your butter or cheese-maker to favor you as patron or manager in the making of tests.

18. Lack of faith in the accuracy and honesty of the test is the greatest enemy of the creamery interests of the present time, and every creamery manager should strive to eliminate this distrust.

TO THE BUTTER-MAKER.

1. Be honest. It is the best qualification for a man in any business, as well as for a butter-maker or creamery manager.
 2. Keep the person clean as well as the creamery and utensils.
 3. If every butter and cheese-maker in Iowa would be scrupulously clean in his vocation, it would add much to our reputation and profit.
 4. If possible, keep in touch with your patrons, so that your suggestions and requests will be readily complied with.
 5. It is impossible to make good butter out of poor milk. Send it back.
 6. To make fine butter requires great skill, and the operator should take pains to become thoroughly acquainted with his business.
 7. Strive to keep in touch with the butter-makers of the state.
 8. Make suggestions for the report of the dairy commissioner. He would like them.
- It is easily possible to make an increase of 10 per cent in the next year's product of butter and cheese. That would mean an addition of \$1,500,000 to the net income of the dairymen of this state.
- Iowa does and should produce the best butter in the world, and the whole world should know of it, that the world's markets may be open to us.

DAIRY LAWS OF IOWA.

CHAPTER 13.

OF THE DAIRY COMMISSIONER AND IMITATION DAIRY PRODUCTS.

SECTION 2515. Appointment—bond—powers and duties of commissioner—report. On or before the first day of April of each even numbered year, the governor shall appoint a dairy commissioner, who shall have a practical knowledge of and experience in the manufacture of dairy products, and hold his office for two years from the first day of May following his appointment, and until his successor is appointed and qualified, subject to removal by the governor for inefficiency, neglect or violation of duty. He shall give bond in the sum of ten thousand dollars, conditioned for the faithful performance of his duties, with sureties to be approved by and filed with the secretary of state. He shall keep on hand a supply of standard test tubes or bottles and milk measures or pipettes adapted for use by each milk testing machine, the manufacturers or dealers of which have filed with the dairy commissioner a certificate from the director of the Iowa agricultural experiment station, which shall certify that said milk testing machine, when properly and correctly operated, will produce accurate measurements of butter fat, and furnish to any person or corporation desiring the same for testing milk one such tube or bottle, and such milk measure or pipette for each factory, of the kind adapted for the machine operated therein, upon request therefor, certifying it to be accurate, reliable and standard, placing thereon the letters "D. C." as a permanent mark; the tubes or bottles and pipettes to be furnished at the actual cost thereof. He shall have and keep an office in the capitol, and preserve therein all correspondence, documents, records and property of the state pertaining thereto, and may, when necessary, employ a clerk at an expense of not more than seventy-five dollars per month. During his term of office he shall hold no other official position

nor any professorship in any state educational institution, and on or before the first day of November shall make annual report to the governor, which shall contain a detailed account of all his doings as commissioner, and the receipts and disbursements of his office since the preceding report, with such facts and statistics in regard to the production, manufacture and sale of dairy products, with such suggestions, as he may regard of public importance connected herewith. In the conduct of his office he shall have power to issue subpoenas for witnesses, enforce their attendance, and examine them under oath by him to be administered, such witnesses to be allowed fees as in justices' courts, to be paid by the commissioner as part of the expenses of his office, and do such other acts and things as are necessary and proper in the enforcement of the provisions of this chapter.

SEC. 2516. **Imitation butter or cheese.** Every article, substitute or compound, save that produced from pure milk or cream from milk of cows, made in the semblance of or designed to be used for and in the place of butter, is imitation butter; and every article, substitute or compound, save that produced from pure milk or cream from milk of cows, made in the semblance of or designed to be used for and in the place of cheese, is imitation cheese. No one shall manufacture, have in his possession, offer to sell or sell, solicit or take orders for delivery, ship, consign or forward by any common carrier, public or private, and no common carrier shall knowingly receive or transport any such imitation butter or cheese, except in the manner and subject to the regulations in this chapter provided.

SEC. 2517. **Substitute for butter or cheese—regulations as to sale and use—transportation.** A substitute for butter and cheese, not having a yellow color nor colored in imitation of butter and cheese as prohibited in the next section, may be manufactured, kept in possession, offered for sale, sold, shipped, consigned or forwarded by common carriers, public or private, if each tub, firkin, box or other package in which the same is kept, offered for sale, sold, shipped, consigned or forwarded shall have branded, stamped or marked on the side or top thereof, in the English language, in a durable manner, the words, "Substitute for butter," or "Substitute for cheese," as the case may be, the letters of the words to be not less than one inch in length by one-half inch in width. The defacing, erasure, canceling or removal of this brand or mark, with

intent to mislead, deceive, or violate any provision of this chapter, is prohibited. Such substitute for butter or cheese may be kept, used or served as a food or for cooking in hotels, restaurants, lunch counters, boarding houses or other places of public entertainment, only in case the proprietor or person in charge of such place shall display and keep constantly posted a card opposite each table or other place where the guests or others are served with the same, which card shall be white, at least ten by fourteen inches in size, the words, "Substitute for butter used here" or "Substitute for cheese used here," as the case may be, printed in black Roman letters of the same size as herein required to be placed upon the tubs, firkins, boxes or other package in which substitute for butter or cheese is kept, and no other words or figures shall be printed thereon. No substitute for butter or cheese shall be offered for sale in the manufacturer's original package under the name of or for true butter or cheese made from the milk or cream of cows, nor shall any substitute for butter or cheese be offered for sale or sold unless the purchaser at the time was informed thereof, and, in addition, furnished with a printed statement in the English language in prominent type that the substance sold is such substance, and giving the name and place of business of the maker. Nothing herein contained, however, shall be so construed as to prohibit the transportation of imitation butter or cheese through and across the state.

SEC. 2518. **Coloring—adulteration.** No one shall color with any matter whatever any substance intended as a substitute for butter or cheese, so as to cause it to resemble true dairy products, or combine any animal fat, vegetable oil or other substance with butter or cheese, or combine with any substance whatever, intended as a substitute for butter or cheese, any thing of any kind or nature for the purpose or with the effect of imparting to the compound the color of yellow butter or cheese, the product of the milk or cream from cows, or use, solicit orders for delivery, keep for sale or sell any such substance so colored and disguised as a substitute for butter or cheese; but nothing in this chapter shall be construed to prohibit the use of salt, rennet, or harmless coloring matter in making butter or cheese from such milk or cream.

SEC. 2519. **Package branded.** No one shall have in his possession or under his control, except for the actual consumption of himself or family, any substance designed as a substitute

for butter or cheese, unless the tub, firkin, box or package holding the same is branded or marked as in this chapter required. Any person having in his possession or under his control such substance, not so branded or marked, shall be presumed to know its true character and name.

SEC. 2520. Contracts invalid. No action shall be maintained in any of the courts of the state upon any contract or sale made in violation of or with the intent to violate any provision of this chapter by one who was knowingly a party thereto.

SEC. 2521. Search warrants—samples. Whoever shall have in possession or control any imitation butter or cheese or any substance designed to be used as a substitute for butter or cheese contrary to the provisions of this chapter, shall be held to have possession of property with intent to use it as a means of committing a public offense, and all the provisions of the chapter relating to search warrants and proceedings thereon shall apply, except the officer serving the warrant, in addition to his duties as therein required, shall deliver to the dairy commissioner, or to a person by him 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 return to the person from whom it was taken the remainder of each article seized. If any sample is found to be imitation butter or cheese, or substance designed to be used as a substitute for butter or cheese, it shall be returned to and retained by the magistrate for the purposes contemplated in said chapter on "search warrants and proceedings thereon," but if any sample be found not imitation butter or cheese, or a substance designed to be used as a substitute therefor, the value of the same shall be paid by the dairy commissioner as a part of the expenses of his office, to the person from whom it was taken.

SEC. 2522. Milk dealers—manufacturers and packers—reports. Every city milk dealer, or every person furnishing milk or cream to such dealer, or the employe of such milk dealer, and every person or corporation, or the employe of such person or corporation, who operates a creamery, cheese or condensed milk factory, or re-works or packs butter, shall maintain his premises and utensils in a clean and hygienic condition, and shall make, upon blanks furnished by the dairy commissioner, such reports and statistics as may be required for the

purpose of compiling statistics authorized by this chapter, and such dealer, owner, operator or business manager shall make such returns and reports in the manner and in the time prescribed by the commissioner, and certify to the correctness thereof.

SEC. 2523. Milk test. Any person or corporation, or the employe of such person or corporation, who operates a creamery or cheese or condensed milk factory, and uses a chemical milk test to determine the quantity of butter fat in milk purchased, used or received, shall so use only such tests as shall be clear oil, free from any foreign substance, and produce correct measurements of butter fat, and every such person or corporation using a milk test shall procure from the dairy commissioner for each factory so operated one standard tube or bottle, and one standard measure or pipette, for testing milk, certified and marked by him as in this chapter provided, which shall be kept for inspection by the patrons and used by such person or corporation in testing or verifying test tubes or bottles and milk measures or pipettes used. In any action arising between any such operator and patron, the burden of establishing the use of reliable tests and the results therefrom, equivalent to the standard herein provided, shall be upon the operator.

SEC. 2524. Samples collected. The commissioner may appoint agents in any city having over ten thousand inhabitants to collect from each dealer, not more than four times each month, samples of milk offered for sale therein. The agent shall make an accurate test of each sample received by him, and keep a true record thereof, with the name and location of the person from whom it was obtained, and report this work in detail to the commissioner, the compensation therefor not to exceed three dollars for each day actually employed therein.

SEC. 2525. Permits. Any person or corporation who shall sell milk or cream from a wagon, depot or store, or sell or deliver milk or cream to a hotel or restaurant or boarding house, or any public place in any such city, shall be considered a city milk dealer. No such city milk dealer shall sell milk or cream from a wagon, depot or store in any such city without a written permit from the commissioner for each wagon, depot or store operated by him, for which he shall pay annually one dollar. All permits shall expire on the fourth day of July of each year, and no permit shall be issued for less than one dollar.

SEC. 2526. **Inspection.** He or his agent may open any can or vessel containing milk or cream offered for sale in such city, and inspect its contents and take samples therefrom for testing or analysis. And any city milk dealer, or employe of such milk dealer, or any other person who shall resist or interfere with the commissioner or his agent in the performance of his duties in executing any of the requirements of this chapter, shall be guilty of a misdemeanor and punished as provided in this chapter.

SEC. 2527. **Penalties.** Whoever shall violate any provision of this chapter shall be punished by a fine not exceeding five hundred dollars, or by imprisonment in the county jail not exceeding six months, or by both such fine and imprisonment, at the discretion of the court.

SEC. 2528. **Compensation—expenses.** The commissioner shall be allowed necessary postage, stationery and office supplies, and shall receive an annual salary of fifteen hundred dollars and necessary expenses, which shall not exceed three thousand dollars per year; such expenses to be itemized, verified by him, and, when examined and approved by the executive council, to be paid upon a warrant of the state auditor drawn upon the state treasurer. The salary of the clerk shall be paid in the same manner.

FROM CHAPTER 10, TITLE 24, CODE.

SEC. 4989. **Sale of impure or skimmed milk—skimmed milk cheese—labeling.** If any person shall sell, exchange, or expose for sale or exchange, or deliver or bring to another, for domestic or potable use, or to be converted into any product of human food, any unclean, impure, unhealthy, adulterated, unwholesome or skimmed milk, or milk from which has been held back what is commonly known as strippings, or milk taken from an animal having disease, sickness, ulcers, abscess or running sore, or which has been taken from an animal within fifteen days before or five days after parturition; or if any person, having cows for the purpose of producing milk or cream for sale, shall stable them in an unhealthy place or crowded manner, or shall knowingly feed them food which produces impure, unwholesome milk, or shall feed them distilled glucose or brewery waste in any state of fermentation, or upon any substance in a state of putrefaction or rottenness or of an unhealthy nature, or shall sell or offer for sale cream which

has been taken from milk the sale of which has been prohibited, or who shall sell or offer for sale, as cream, an article which shall contain less than the amount of butter fat as prescribed in this chapter; or if any person shall sell or offer for sale any cheese manufactured from skimmed milk, or from milk that is partly skimmed, without the same being plainly branded, stamped or marked on the side or top of both cheese and package, in a durable manner, in the English language, the words "skimmed milk cheese," the letters of the words to be not less than one inch in height and one-half inch in width, he shall be fined not less than twenty-five nor more than one hundred dollars, and be liable for double damages to the person or persons upon whom such frauds shall be committed; but the provisions of this section shall not apply to skimmed milk when sold as such and in the manner and subject to the regulations prescribed in this chapter.

SEC. 4990. **What deemed adulterated or impure milk.** For the purposes of this chapter, the addition of water or any other substance or thing to whole milk or skimmed milk or partially skimmed milk is hereby declared an adulteration, and milk which is obtained from animals fed upon waste as defined in this chapter, or upon any substance of an unhealthy nature, is hereby declared to be impure and unwholesome, and milk which is proved by any reliable method of test or analysis to contain less than twelve and one-half per cent of milk solids to the hundred pounds of milk, or than three pounds of butter fat to one hundred pounds of milk, shall be regarded as skimmed or partially skimmed milk, and every article not containing fifteen per cent or more of butter fat shall not be regarded as cream.

SEC. 4991. **Enforcement.** It is hereby made the duty of the dairy commissioner to enforce the provisions of the two preceding sections.

STATE OF IOWA,
OFFICE OF ATTORNEY-GENERAL,
DES MOINES, July 7, 1898.

Hon. L. S. Gates, Dairy Commissioner, Des Moines, Iowa:

DEAR SIR—You asked for my opinion in reference to the necessity of proving the *intent* of violating the provisions of section 4989 of the code of 1897. You propound the following inquiries:

DES MOINES, Iowa, July 6, 1898.

Hon. Milton Remley, Attorney-General, Des Moines, Iowa:

DEAR SIR—I would like your opinion on the following point in the prosecution of offenders who sell milk below standard (3 per cent butter fat):

Is it necessary for the state to prove only that the offender sells or offers for sale milk below what the law requires (3 per cent butter fat)? Is it necessary for the state to prove that the one who sells or offers for sale milk below standard had an intent to deceive, or actually watered or skimmed or otherwise adulterated the milk offered for sale?

Yours respectfully,

L. S. GATES,
Dairy Commissioner.

Answering, I would say that the statute does not contemplate the necessity of proving that the party who adulterates milk, or offers the same for sale when adulterated or in any other condition forbidden by law, has an intent to violate the law.

In other words, he who offers milk for sale must know that it is pure milk. It must be in no manner "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 sores, or which has been taken from an animal within fifteen days before or five days after parturition."

Neither is it necessary to prove that the party offering milk for sale adulterated the same, or that he had knowledge that the same had been adulterated, or that he had any intent to violate the law.

See section 88, Wharton's Criminal Law, eighth edition, *Com. v. Faren*, 9 Allen, 489; *Com. v. Waite*, 11 Allen, 264; *State v. Smith*, 10 R. I., 258.

Section 4900 of the code of 1897 describes what the law contemplates to be adulterated or impure milk. It reads as follows:

"SEC. 4900. For the purposes of this chapter, the addition of water or any other substance or thing to whole milk or skimmed milk, or partially skimmed milk, is hereby declared an adulteration, and milk which is obtained from animals fed upon waste, as defined in this chapter, or upon any substance of an unhealthy nature, is hereby declared to be impure and unwholesome, and milk which is proved by any reliable method of test or analysis to contain less than twelve and one-half per cent of milk solids to the one hundred pounds of milk, or than three pounds of butter fat to one hundred pounds of milk, shall be regarded as skimmed or partially skimmed milk, and every article not containing fifteen per cent or more of butter fat shall not be regarded as cream."

Yours respectfully,

W. H. REDMAN,
Assistant Attorney-General.

The foregoing pages, containing the Practical Suggestions, prepared by the late Dairy Commissioner, L. S. Gates, together with the Dairy Laws, are printed in pamphlet form and will be sent on application, in any reasonable number, for distribution to the patrons of the creameries.

REPORTS FROM IOWA CREAMERIES.

The statistical information contained in this report, aside from the reports of railroad shipments, is obtained from the creameries and cheese factories of the state. Following is a copy of the blank sent to owners and managers. Changes in ownership and managers make it difficult for this office to make sure of reaching the proper person in each creamery. As the year for which the report is made ends May 1st, the blank must be sent at a time of year when creamery men are especially busy. It is found that an average of four notices is required to elicit returns from the creameries of this state. If the reports were sent to this office promptly so that they were received by the first of May, the annual report of the office would be in the hands of the public by the first of October. This year, work on the compilation of the report was not begun until several weeks after that date. This department needs the active co-operation of all creamery and dairy men in order to make it efficient.

The statistics for this report were collected by the late L. S. Gates during the months he was in office.

CREAMERY REPORT FROM MAY 1, 1897, TO MAY 1, 1898.

The information gained from your reports to this office is valuable and is sought for by people in every state; also by people of foreign countries. I trust you will help us to make a complete report of the great dairy interests of our state by filling the blank spaces as indicated below and returning to this office. Yours respectfully,

L. S. GATES,
Dairy Commissioner.

1. Name of creamery.....
2. Located at or near what town.....County.....
3. Name of secretary or manager.....
4. Postoffice address of secretary or manager.....County.....

5. Names of skim stations: (1).....
 Located at or near.....County.....
 (2).....
 Located at or near.....County.....
 (3).....
 Located at or near.....County.....
6. Shipping station.....County.....
 On what railroad.....
7. What is a fair valuation of creamery plant? \$..... When built?.....
8. Of your skim station plants? \$..... When built?.....
9. Is creamery operated by individual, stock company, or co-operative association?.....
10. If your creamery has changed ownership or been leased to present operator since May 1, 1897, give name of former owner or operator and how operated.
 Name of former owner or operator.....
 How operated.....
11. Is your creamery operated as a separator?..... Gathered cream?.....
 State number of separators in use.....
 Give name of each and whether turbine or belt.....

12. Do you pay by the test or by the hundred?.....
 Give trade name of tester.....
 Name of manufacturer of tester.....
 Number of D. C. test bottle..... Number of D. C. pipette.....
13. Did you manufacture cheese during any part of the year ending May 1, 1898?.....
14. Is cream received by the gauge or inch, by the oil test, or by the Babcock test?.....
15. How many of your patrons furnish cream from farm separators?.....
16. Was creamery operated entire year ending May 1, 1898?.....
 If not operated entire year please check the months the creamery was closed.
 1897—May, June, July, August, September, October, November, December. 1898—January, February, March, April.
17. Name of butter-maker.....
 Monthly wages paid butter-maker, \$..... No. of months employed.....
 Monthly wages paid first helper, \$..... No. of months employed.....
 Monthly wages paid second helper, \$..... No. of months employed.....
18. Has butter-maker taken a course in dairying?..... If so, where?.....
19. State average number of persons other than patrons employed in collecting milk..... Cream.....
20. State yearly expense of collecting milk, \$..... Cream, \$.....

21. Give below the number of pounds of milk received in each month from May 1, 1897, to May 1, 1898, average test, number pounds of butter made and net value of butter made.

Pounds of milk.	Average test.	Lbs. butter made.	Net value.
May, 1897.....	\$.....
June, 1897.....
July, 1897.....
August, 1897.....
September, 1897.....
October, 1897.....
November, 1897.....
December, 1897.....
January, 1898.....
February, 1898.....
March, 1898.....
April, 1898.....
Total.....	Av.....	Total.....	Total \$.....

22. State the average yearly cost of manufacturing a pound of butter, not including delivery of milk.....cents per pound.
23. State the yearly average cost of manufacturing gathered cream butter.....cents per pound.
24. What part or per cent of your butter was furnished to patrons?.....
 What part or per cent of the butter was marketed for consumption in Iowa?.....
 What part or per cent of the butter was shipped to points outside of the state?.....
 State what amount of butter was shipped to the following markets for the year ending May 1, 1898:
 New York.....lbs. Chicago.....lbs. Boston.....lbs.
 Philadelphia.....lbs. New Orleans.....lbs. Cleveland, O.....lbs.
 Elgin, Ill.....lbs. Pacific coast.....lbs.
 Name other cities with amounts shipped.....
25. Give the number of persons patronizing the creamery, including the skim stations connected therewith, from May 1, 1897, to May 1, 1898, or part of year operated.....
26. State the number of cows from which your creamery, including skim stations, receives milk.....
 (Please take extra pains to get information so as to answer this question.)
27. If there are any new creameries or skim stations in your county, opened since November 1, 1897, state where they are located and give proprietor or manager:
 Name..... P. O. address.....
 Name..... P. O. address.....
 Name..... P. O. address.....
28. If there are any old creameries or skim stations reopened in the past year in your county, give location and by whom operated.
 Name..... P. O. address.....
 Name..... P. O. address.....

29. Are there any creameries that have ceased operating in your county since May 1, 1897?

Name..... P. O. address.....
 Name..... P. O. address.....

30. Give the names of any creameries or skim stations in your county having burned since November 1, 1897, giving causes when known.

Has the creamery or creameries been rebuilt?

31. Give the amount and value of all coal used in your creamery during the year ending May 1, 1898, or part of year operated.

Number of tons..... Value, \$.....
 State what per cent or amount of this coal was domestic (mined in Iowa):
 Number of tons or per cent..... Value, \$.....
 State what per cent or amount was foreign (mined outside of Iowa).
 If quality, cost at mine, or freight rates cause preference for foreign coal, state which; also other reasons, if any.

L. S. Gates, Dairy Commissioner:

DEAR SIR—Herewith find a report of the..... Creamery
 for the year ending May 1, 1898. Respectfully,

(Prop., Sec. or M'gr.)

The office record number of this creamery for 1897 is.....
 The office record number of this skim station for 1897 is.....

NOTE—Kindly give this your immediate attention. Stamped and addressed envelope enclosed.

FARM SEPARATORS.

Replies to the question, "How many of your patrons furnish cream from farm separators?" were received from nearly a hundred creameries. Naturally the greater part of the replies came from creameries of the gathered cream class, but quite a number are reported from separator creameries. Ninety-three creameries in forty-seven counties report 904 of the farm separators in use. The reports are from counties scattered over the state, and show that the farm separator is sufficiently widespread in Iowa for an intelligent experiment as to its usefulness. The increase or decrease of the number in use will certainly be an indication of the favor in which they are held in

the communities where they have been used. The following table shows that even now a few counties have a respectable number in use. One new creamery reports that all the patrons will furnish cream from hand separators, and the success of such a creamery will be a matter of interest to the dairymen of the state.

COUNTY.	NO. SEPARATORS
Iowa.....	150
Jefferson.....	133
Mitchell.....	122
Winnebago.....	63
Postawattamie.....	42
Chickasaw.....	39
Marshall.....	38
Howard.....	31
Floyd.....	27
Wright.....	26
Keokuk.....	20
Grundy.....	20
Clayton.....	18
Black Hawk.....	18
Ida.....	18
Franklin.....	14
Muscatine.....	14
Woodbury.....	11
Jackson.....	10
Miscellaneous.....	90
Total.....	904

WHAT IT COSTS TO MAKE A POUND OF BUTTER.

The following table gives the average cost of making a pound of butter in creameries of different capacities. It will be seen that there is a decrease in cost with an increase in the amount of milk handled. The fact is not so surprising as is the amount of the difference. The difference between the highest and the lowest averages is 1.21 cents which is more than 11 per cent on 19.71 cents, the average yearly price of a pound of butter. The decrease in the expense of the creamery will certainly be followed by an increased price for butter fat paid the farmer,

which increase though small in proportion will in the aggregate make a large sum. A cent a pound saved will mean nearly a million dollars on our butter product.

The creamery reporting the lowest average cost for making a pound of butter is in one of the best dairy counties of the state. This creamery reports that 400,000 pounds of butter were made at a cost of 1 cent per pound. The expense of butter-maker and assistant was reported as \$1,240, leaving \$2,760 for other expenses. The largest creamery in the state operating without skim stations reports 539,000 pounds of butter manufactured at a cost per pound of 1.2 cents. The expense of butter-maker and assistants is reported as \$2,160.

The reports of the cost of manufacturing gathered cream butter are not so many in number nor so satisfactory as the reports on separator butter. A representative report is one of a creamery making 400,000 pounds of butter at a cost, including gathering the cream, of 1.86 cents per pound.

TABLE No. 1.

Showing cost of making butter in creameries of different classes, not including cost of hauling milk or cream.

DESCRIPTION OF CREAMERIES.	No. reporting.	Average cost— cents.
IN THE SEPARATOR CLASS OF CREAMERIES.		
In creameries receiving not more than 1,250,000 pounds of milk, cost reported ranging from 1.5 cents to 7 cents per pound	43	3
In creameries receiving not more than 2,500,000 pounds of milk, cost reported ranging from 1.25 cents to 4.5 cents per pound	33	2.42
In creameries receiving not more than 3,500,000 pounds of milk, cost reported ranging from 1.25 cents to 4 cents per pound	77	2.2
In creameries receiving more than 3,500,000 pounds of milk, cost reported ranging from 1 cent to 4 cents per pound	59	1.79
IN THE GATHERED CREAM CLASS OF CREAMERIES:		
In creameries making less than 150,000 pounds of butter, cost reported ranging from 1.5 cents to 4 cents per pound	17	2.93
In creameries making more than 150,000 pounds of butter, cost reported ranging from 1.25 cents to 3.84 cents per pound	15	2.33

BUTTER PRICES.

The prediction made in last year's report that the price of butter had reached the minimum and that a recovery in prices might be looked for is shown by the following table to be well founded. The average prices for the months of the year have been uniformly higher than the prices for the corresponding

months of the previous year, except the months of February and October, 1898. The increase in price for the year is such that, notwithstanding the decrease in butter manufacture, the total net amount received for the product is not far from the total of the previous year. The increase in price will also in part account for the fact that the average number of months of operation of the creameries increased from 10.2 to 11 months, since the tendency would be to keep the creameries running when prices are good.

TABLE No. 2.

Showing average monthly price of fancy western creamery butter in New York market.

MONTH.	Twelve months ending Nov. 1, 1897.	Twelve months ending Nov. 1, 1898.	Twelve months ending Nov. 1, 1899.	Twelve months ending Nov. 1, 1900.	Twelve months ending Nov. 1, 1901.	Twelve months ending Nov. 1, 1902.	Twelve months ending Nov. 1, 1903.	Twelve months ending Nov. 1, 1904.
November.....	\$.2749	\$.2590	\$.3100	\$.2790	\$.2510	\$.2339	\$.3112	\$.2325
December.....	.2912	.2887	.3112	.2840	.2440	.2500	.2250	.2240
January.....	.2812	.3075	.3387	.2562	.2519	.2296	.1900	.2040
February.....	.2842	.2975	.3275	.2700	.2384	.2000	.2050	.2042
March.....	.2780	.2665	.2925	.2350	.2670	.2185	.1900	.1937
April.....	.2094	.2850	.3112	.2387	.3000	.1650	.1880	.1980
May.....	.2820	.3125	.3455	.1700	.1785	.1472	.1530	.1680
June.....	.1825	.1944	.2131	.1831	.1794	.1550	.1500	.1637
July.....	.1800	.2210	.2160	.1850	.1770	.1505	.1500	.1687
August.....	.2000	.2220	.2360	.2390	.1940	.1571	.1675	.1850
September.....	.2475	.2625	.2750	.3300	.2125	.1600	.1930	.2025
October.....	.3000	.2987	.2941	.2340	.2394	.1850	.2200	.2225
Av. val. per lb. for each yr.	\$.2320	\$.2594	\$.2776	\$.2350	\$.2190	\$.1882	\$.1885	\$.1971

THE CREAMERIES OF IOWA.

For a number of years there has been a steady increase in the number of creameries and skim stations in this state. The past year, notwithstanding the decrease in the total amount of butter manufactured, has been no exception to the rule of creamery building. The following tables will show a gratifying increase in the number of creameries now in operation in the state, and will indicate that the creamery industry in Iowa is still making large advances. Of course the varying conditions and changing prices of butter and of cattle will cause

variations in the amount of butter made from year to year, but the continued and steady increase of the number of creameries in the state indicates a steady increase in the confidence of the people in the dairy industry as suitable to Iowa conditions and needs.

In the summary and comparisons found below, the figures show that there is a large increase in the number of creameries which pay for the milk received by the test, and a corresponding decrease in the number of those that pay by the hundred weight. In this connection it may not be out of place to say that a large and increasing number of creameries pay by the 100 pounds, but in proportion to the butter fat. All such are, of course, classed as paying by the test, and only those creameries that pay a uniform price per 100 pounds of milk are classed as paying by the hundred weight. The plan of paying by the hundred weight in proportion to the test is recommended as affording the best basis of comparison of prices paid by competing creameries. Two creameries similarly situated and both paying by test may pay slightly different amounts per pound for butter fat and the same amount per 100 pounds of milk. But only the first of these facts would appear on the face of the statements of the two. But if the statement contains the per cent of butter fat and the price per 100 pounds of milk, the patrons will have an accurate basis for comparisons of prices paid for identical tests. Of course the patron could figure all this out for himself, having given the test and the price per pound of butter fat, but he is not at all likely to do so. The plan suggested would lead to a more complete understanding on the part of the producer of the price he was really getting for his milk, and would render futile any attempt to scale the test for the purpose of deception as to the relative prices paid by competing creameries. Of course no method will avail in the face of downright dishonesty.

The summary also shows that there has been a considerable proportionate increase in the plants classed as combined plants, separator and gathered cream. This increase is almost altogether found in those counties reporting a number of farm separators. Probably there is no great increase in the amount of cream taken in by the combined plants, because the whole number of farm separators is small, but the figures indicate the tendency in that direction. If the farm separator has come to

stay, no doubt other reports in future years will show still further increase in the number of creameries operated in part as separators and in part as gathered cream plants. A real increase in the number of gathered cream plants, in which the cream is raised by the gravity system, would be a cause for discouragement, since there is nothing in the dairy business more certain than that the gravity system is far inferior to the separator system. But the reports and tables given below indicate the reverse.

The total number of creameries owned and operated by individuals remains about the same as heretofore, and the same is true in regard to the number of creameries reported as co-operative in their management. Stock companies have increased more than 100 per cent. This fact requires some explanation.

Section 1610 of the code provides that farmers' mutual co-operative creamery associations shall be exempt from the payment of the incorporation fee of \$25. The attorney-general gives the opinion that a farmers' mutual co-operative creamery association is one in which all the patrons share alike in the profits and losses of the association, and the secretary of state has, in accordance with the above opinion, required all creamery companies seeking incorporation to pay the regular incorporation fee, unless the articles of incorporation filed for record contained the provision that all the patrons of the creamery shall share the profits and losses in the same manner. It is evident that none would be exempt from the payment of the fee under this construction of the law, and hence they would be, technically, not mutual co-operative associations, but stock companies, and have been so reported. It is certain that the creameries operated on the co-operative plan have not decreased in number in the last year, though the reports on the face of them seem to indicate the fact that the only increase is in the number of stock companies. It is not possible to separate from the list those to whom the above explanation applies, and they are all tabulated as they are given in the reports to this office.

Under the head of new creameries, all additions to the list of last year are embraced—strictly new plants, old ones reopened and creameries that have heretofore escaped listing. Comparisons with previous years show a steady and almost uniform rate of increase; yet every report marks the closing of a large number of creameries. The practical difficulties in the way of running a small creamery no doubt are responsible for the num-

ber of plants closed. The successful creamery requires the hearty co-operation of all its patrons to insure its profitability, as well as to produce a good grade of butter. But, despite the number of unsuccessful investments in creamery enterprises, every year shows a net increase of nearly one to a county throughout the state.

NUMBER AND KINDS OF CREAMERIES AND SKIM STATIONS.

	1898.	1897.
Total creameries and skim stations.....	954	891
Number reporting.....	940	890
Number owned and operated by individuals.....	510	504
Number owned and operated on the co-operative plan.....	342	349
Number owned and operated by stock companies.....	88	37

MANNER OF OPERATION.

Number reporting	914	891
Operated as separator	788	771
Gathered cream	66	68
Separator and gathered cream	60	52

MANNER OF PAYMENT.

Number reporting	893	820
By the test	746	698
By the hundred	107	122
New creameries and all additions to the list	133	137
Creameries closed for any reason	53	55

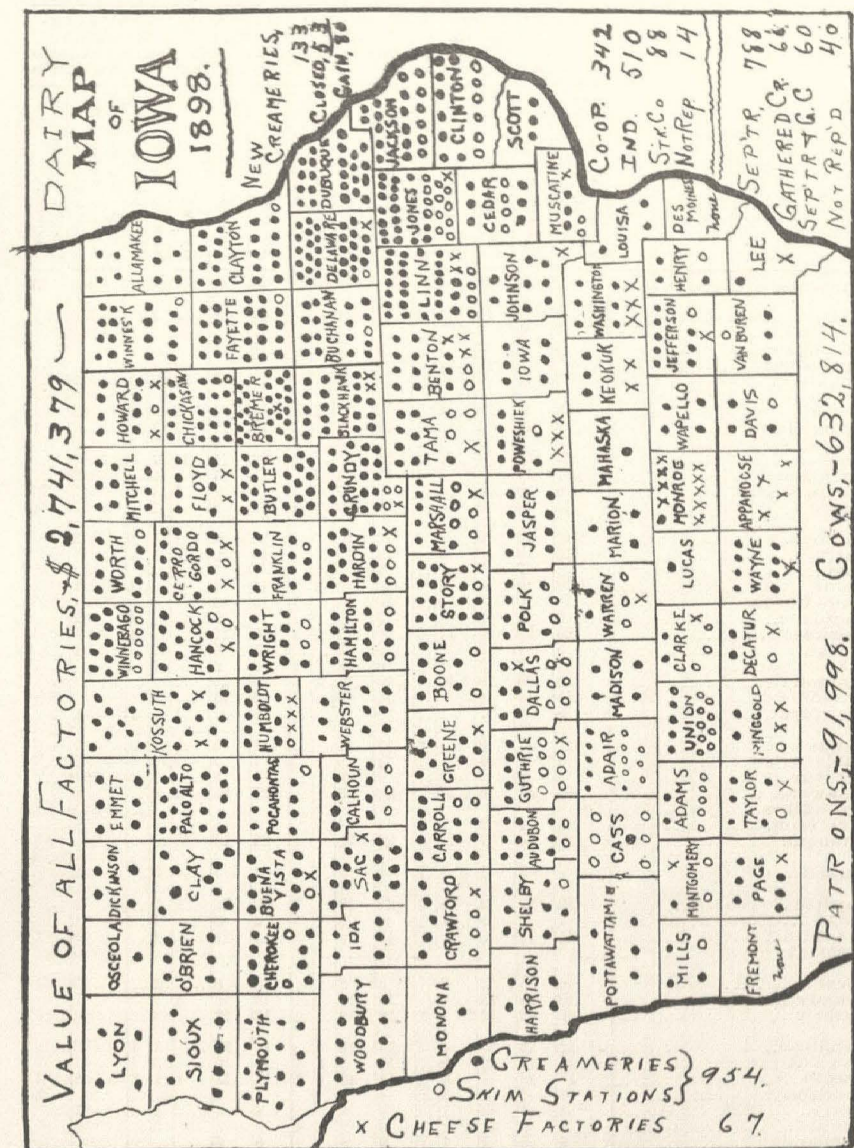


TABLE No. 3.

Statistical report of number of creameries and skim stations.

COUNTIES.	OWNERSHIP— INDIVIDUAL CO-OPERATIVE OR STOCK COMPANY.			HOW OPERATED.		RECEIVING MILK— BY TEST OR BY CWT		NEW CREAM- ERIES AND SKIM STA. AND PLANTS CL'S'D	
	Total number of creameries and skim stations	No. reporting.	Individual.	Co-operative.	Stock company.	No. reporting.	By test.	By cwt.	New creameries. New skim stations. Total new cream- eries and skim stations Plants closed or burned.
The state.....	954	941	510	342	88	914	788	660	803
Adair.....	12	12	11	1	1	11	11	5	6
Adams.....	7	5	5	5	5	7	7	7	4
Allamakee.....	9	9	2	2	2	9	9	9	8
Appanoose.....	11	11	1	1	1	10	10	10	4
Audubon.....	11	11	1	1	1	10	10	10	4
Benton.....	13	13	8	4	1	13	12	1	1
Black Hawk.....	18	15	12	11	1	18	17	1	1
Boone.....	18	15	12	11	1	18	17	1	1
Bremer.....	26	23	4	20	2	26	23	14	1
Buchanan.....	17	17	8	8	1	17	17	17	2
Buena Vista.....	9	9	6	6	6	9	9	9	1
Butler.....	22	22	8	10	4	22	22	18	1
Calhoun.....	11	10	6	3	1	10	10	1	1
Carroll.....	13	13	10	2	1	13	13	10	3
Cass.....	7	7	7	7	7	7	7	7	1
Cedar.....	10	10	8	1	1	10	10	9	1
Cerro Gordo.....	12	10	7	2	1	10	9	1	1
Cherokee.....	9	9	8	1	1	9	9	9	2
Chickasaw.....	20	20	12	3	5	20	20	14	1
Clarke.....	5	5	5	5	5	5	5	5	1
Clay.....	5	5	5	5	5	5	5	5	1
Clayton.....	20	20	9	10	1	20	20	14	1
Clinton.....	14	14	14	14	14	14	14	14	1
Crawford.....	8	8	7	1	1	8	7	1	1
Dallas.....	11	11	8	1	2	11	11	9	2
Davis.....	4	4	4	4	4	4	4	4	1
Decatur.....	3	3	3	3	3	3	3	3	1
Delaware.....	31	31	16	15	28	31	27	25	8
Des Moines.....	4	4	2	1	1	4	4	4	1
Dickinson.....	23	23	7	11	5	23	23	13	1
Dubuque.....	6	5	1	3	1	4	4	4	2
Emmet.....	23	22	3	16	2	22	20	2	3
Fayette.....	7	7	5	1	1	7	6	1	1
Floyd.....	11	11	6	5	1	11	11	1	1
Franklin.....	9	9	9	9	9	9	9	9	1
Fremont.....	12	12	10	1	1	12	12	12	2
Greene.....	12	12	6	4	2	12	12	12	2
Grundy.....	11	11	11	11	11	11	11	11	1
Guthrie.....	12	12	6	4	2	12	12	12	2
Hamilton.....	11	11	2	9	10	11	10	10	3
Hancock.....	15	13	7	6	2	14	13	1	3
Hardin.....	4	4	1	2	4	4	4	4	1
Harrison.....	4	4	3	1	1	4	4	4	1
Henry.....	9	9	9	9	9	9	9	9	2
Howard.....	9	9	9	9	9	9	9	9	2
Humboldt.....	5	5	5	5	5	5	5	5	3
Ia.....	6	6	6	6	6	6	6	6	1
Iowa.....	19	19	14	4	1	19	17	18	1
Jackson.....	8	8	5	2	1	8	7	1	1
Jasper.....	8	8	5	2	1	8	7	1	3

TABLE No. 3—CONTINUED.

COUNTIES.	OWNERSHIP— INDIVIDUAL CO-OPERATIVE OR STOCK COMPANY.			HOW OPERATED.		RECEIVING MILK— BY TEST OR BY CWT		NEW CREAM- ERIES AND SKIM STA. AND PLANTS CL'S'D	
	Total number of creameries and skim stations	No. reporting.	Individual.	Co-operative.	Stock company.	No. reporting.	By test.	By cwt.	New creameries. New skim stations. Total new cream- eries and skim stations Plants closed or burned.
Jefferson.....	8	8	8	8	8	8	8	8	1
Johnson.....	30	30	23	6	1	30	30	30	4
Jones.....	21	21	1	19	1	20	20	20	1
Keokuk.....	3	3	1	2	2	3	3	3	2
Kossuth.....	21	21	1	19	1	20	20	20	1
Lee.....	1	1	1	1	1	1	1	1	1
Linn.....	30	30	15	3	9	30	30	30	9
Louis.....	1	1	1	1	1	1	1	1	1
Lucas.....	1	1	1	1	1	1	1	1	1
Lyon.....	4	4	3	1	3	3	3	3	1
Madison.....	4	4	3	1	3	3	3	3	2
Manaska.....	1	1	1	1	1	1	1	1	2
Marion.....	11	11	7	4	10	8	9	9	4
Marshall.....	4	4	4	4	4	4	4	4	1
Mill.....	9	9	9	9	9	9	9	9	1
Mitchell.....	1	1	1	1	1	1	1	1	1
Monona.....	1	1	1	1	1	1	1	1	1
Monroe.....	3	3	3	3	3	3	3	3	1
Montgomery.....	5	5	5	5	5	5	5	5	1
Muscatine.....	6	6	4	2	6	5	5	5	2
O'Brien.....	1	1	1	1	1	1	1	1	3
Osceola.....	6	6	2	2	2	6	6	6	4
Page.....	17	17	16	1	17	17	17	17	3
Palo Alto.....	11	11	10	1	10	11	11	11	1
Plymouth.....	9	9	9	9	9	9	9	9	1
Pocahontas.....	11	11	11	11	11	11	11	11	1
Polk.....	8	8	8	8	8	8	8	8	1
Pottawattamie.....	6	6	6	6	6	6	6	6	1
Poweshiek.....	3	3	2	1	3	2	2	2	1
Ringgold.....	13	13	11	1	13	13	13	13	9
Sac.....	8	8	4	4	5	8	8	8	3
Scott.....	15	15	8	1	14	14	14	14	1
Shelby.....	11	11	9	1	10	11	11	11	3
Sioux.....	6	6	4	1	6	6	6	6	1
Story.....	11	11	9	1	10	11	11	11	3
Tama.....	6	6	4	1	6	6	6	6	1
Taylor.....	14	14	8	1	14	14	14	14	1
Union.....	4	4	3	1	4	4	4	4	1
Van Buren.....	4	4	4	4	4	4	4	4	1
Wapello.....	6	6	5	1	5	6	6	6	1
Warren.....	8	8	7	1	7	8	8	8	2
Washington.....	15	15	8	1	14	15	15	15	3
Wayne.....	17	17	6	5	17	17	17	17	4
Webster.....	9	9	9	9	9	9	9	9	1
Winnebago.....	17	17	6	5	17	17	17	17	4
Winnesaukee.....	9	9	9	9	9	9	9	9	1
Woodbury.....	9	9	9	9	9	9	9	9	1
Wright.....	11	11	7	4	11	11	11	11	1
The state.....	954	941	510	342	88	914	788	660	803

The creamery at the Iowa Agricultural college is the property of the state, and hence is not enumerated above. Other subtractions from the list, if.

BUTTER-MAKERS AND OTHER EMPLOYES.

The returns from nearly five hundred creameries make the basis of the estimate of the average wages paid butter-makers in this state, and it is gratifying to note a considerable increase in the average monthly wages paid. An increase of \$3.59 over last year's report, together with the fact that the average number of months employed also increased .8 of a month, marks a substantial advance in the remuneration of the men who make our butter.

A large number of creameries make a note of the fact that nearly all the hauling of milk is done by the patrons of the creamery. The expense of hauling the milk that will make a pound of butter will not vary much from 2.25 cents, but the conditions are so different in the several localities that no attempt has been made to estimate what the average cost would be for the state.

	1898.	1897.
Average monthly wages of butter-makers	\$53 63	\$50.04
Average number of months employed	11	10.2

TABLE NO. 4.
Butter-makers and other employes.

COUNTIES.	BUTTER-MAKERS' AND ASSISTANTS' WAGES.						EXPENSE HAULING MILK.				EXPENSE HAULING CREAM.				EMPLOYEES' EXPENSE.	
	No. creameries.	Butter-makers reported.	Average wages per month.	Total paid butter-makers.	No. of assistants employed.	Average wages of assistants.	Total paid assistants.	Creameries reporting.	No. employed not patrons.	Total paid for hauling milk.	Creameries reporting.	No. employed.	Total paid for hauling cream.	Total employees.	Total paid employees of all kinds.	
The State	733	479	\$53.63	\$ 294,151	280	\$26.20	\$ 53,392	205	1,457	\$ 405,014	58	323	\$ 126,061	2,539	\$ 878,618	
Adair	5	3	50.00	1,800	4	39.00	1,576	2	17	4,113	.....	.....	.....	24	7,489
Adams	2	1	83.00	996	1	30.00	180	.....	.....	.....	.....	.....	.....	2	1,176
Allamakee	9	5	61.00	3,660	4	26.55	1,275	3	33	15,000	3	28	9,765	70	29,730	
Appanoose .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Audubon	9	6	75.17	5,412	1	35.00	430	4	30	10,886	.....	.....	.....	37	16,718
Benton	11	5	43.53	2,361	2	22.50	465	2	20	3,757	1	8	960	35	7,743	
Black Hawk	18	13	54.65	8,526	6	24.00	1,570	5	50	16,139	.....	.....	.....	39	29,235
Boone	8	3	46.66	1,500	3	28.33	920	2	7	1,640	1	2	536	15	4,506	
Bremor	28	20	62.44	14,985	5	16.00	918	5	58	4,832	1	5	1,400	88	22,135	
Buchanan	13	7	64.61	4,430	8	25.00	2,400	4	38	14,852	.....	.....	.....	51	22,682
Buena Vista	8	5	54.00	3,240	5	29.00	1,515	4	30	7,204	.....	.....	.....	40	11,959
Butler	22	15	53.33	9,550	10	25.10	2,690	2	12	2,472	1	1	325	38	14,437	
Calhoun	8	5	56.60	3,380	2	50.00	800	.....	.....	.....	.....	.....	.....	7	4,180
Carroll	11	3	55.00	1,980	3	20.50	854	2	20	4,485	.....	.....	.....	26	7,266
Cass	1	1	60.00	720	2	30.00	600	.....	.....	.....	.....	.....	.....	3	1,320
Cedar	6	4	50.00	1,860	2	25.00	315	1	3	160	1	5	3,000	14	5,335	

TABLE No. 4—CONTINUED.

COUNTIES.	BUTTER-MAKERS' AND ASSISTANTS' WAGES.						EXPENSE HAULING MILK.			EXPENSE HAULING CREAM.			EMPLOYEES' EXPENSE.		
	No. creameries.	Butter-makers reported.	Average wages per month.	Total paid but-ter-makers.	No. of assistan s employed.	Average wages of assistants.	Total paid assistants.	Creameries re- porting.	No. employed not patrons.	Total paid for hauling milk.	Creameries re- porting.	No. employed.	Total paid for hauling cream.	Total employees.	Total paid em- ployes of all kinds.
Cerro Gordo.....	11	5	48.60	2,676	3	22.50	615	2	8	2,169	1	2	1,102	15	5,947
Cherokee.....	7	3	56.66	1,825	3	22.50	615	2	12	2,254	1	2	1,102	18	4,694
Chickasaw.....	19	15	58.00	10,440	11	28.50	3,722	9	73	24,510	1	2	1,102	99	38,672
Clarke.....	2	1	35.00	420	1	20.00	200	1	10	4,000	1	2	1,102	2	620
Clay.....	9	3	53.33	1,920	1	28.00	280	2	10	4,000	2	4	1,057	14	6,200
Clayton.....	19	17	54.15	10,430	10	29.20	3,267	12	128	46,535	2	4	1,057	159	61,289
Clinton.....	9	3	41.66	1,500	2	24.00	576	1	2	2,169	1	2	1,102	5	2,076
Crawford.....	5	3	41.66	1,500	2	24.00	576	1	2	2,169	1	2	1,102	5	2,076
Dallas.....	5	5	44.50	2,670	2	33.75	810	5	24	7,220	1	4	900	21	10,700
Davis.....	3	2	40.00	960	2	23.75	315	1	2	2,169	1	4	900	8	2,175
Decatur.....	2	2	40.00	960	2	23.75	315	1	2	2,169	1	4	900	8	2,175
Delaware.....	31	14	57.21	9,612	7	20.00	1,562	6	40	12,588	1	2	1,102	61	23,762
Des Moines.....	4	3	65.00	2,340	1	25.00	75	3	20	4,730	1	2	1,102	24	7,145
Dickinson.....	23	18	49.00	10,259	4	20.00	785	7	59	16,009	1	2	1,102	81	27,053
Dubuque.....	6	3	57.00	2,041	1	15.00	180	1	2	2,169	1	2	1,102	4	2,221
Emmet.....	22	17	57.50	11,600	13	24.00	3,666	11	106	37,116	1	5	2,650	136	52,382
Fayette.....	7	4	58.75	2,820	2	23.00	204	2	13	3,200	1	5	2,650	24	8,874
Floyd.....	10	8	47.00	4,500	4	29.00	1,230	6	34	10,672	1	5	2,650	46	16,402
Franklin.....	8	6	45.33	3,264	3	24.00	692	3	16	3,627	1	2	1,102	25	7,583
Guthrie.....	16	9	44.10	4,610	7	28.30	2,156	6	41	13,975	1	2	1,102	57	20,741
Greene.....	5	2	42.50	957	1	15.00	180	1	5	1,500	1	2	1,102	7	2,457
Hamilton.....	10	6	55.00	3,500	6	32.50	2,165	4	28	8,151	1	2	1,102	40	13,816
Hancock.....	9	6	47.50	3,146	1	15.00	180	3	16	2,120	1	2	700	24	5,966
Hardin.....	12	7	60.36	5,070	9	31.70	2,813	4	30	8,434	1	5	1,752	51	18,089
Harrison.....	4	2	57.50	1,380	2	26.00	400	2	19	2,450	1	5	1,752	23	4,230
Henry.....	3	2	57.50	1,380	1	30.00	270	3	14	3,869	1	5	1,752	15	4,139
Howard.....	8	8	54.62	4,944	3	24.30	722	1	8	2,000	3	25	7,860	44	15,526
Humboldt.....	8	8	52.50	4,620	3	20.00	535	1	5	1,550	1	2	1,102	11	5,215
Ida.....	5	1	40.00	480	1	30.00	360	1	5	1,550	1	2	1,102	7	2,390
Iowa.....	6	2	50.00	1,200	2	32.50	540	1	5	1,550	2	14	5,450	18	7,190
Jackson.....	12	10	48.00	5,205	5	28.00	1,200	2	8	1,780	3	12	4,200	35	12,385
Jasper.....	8	5	42.50	2,544	3	29.00	642	4	28	7,490	1	2	1,102	36	10,676
Jefferson.....	8	7	45.70	3,700	1	15.00	90	3	24	4,150	1	2	1,102	32	7,940
Johnson.....	4	1	35.00	420	1	20.00	200	1	3	660	1	3	720	7	1,800
Jones.....	18	10	54.10	5,812	2	28.75	405	1	2	2,169	1	2	1,102	12	6,217
Keokuk.....	3	3	54.00	1,920	2	28.50	474	1	12	4,500	1	14	3,000	31	9,894
Kossuth.....	21	15	54.80	9,866	9	27.54	2,008	1	12	4,500	1	14	3,000	24	11,874
Lee.....	1	1	40.00	480	1	30.00	360	1	5	1,550	1	2	1,102	4	1,582
Lincoln.....	25	13	43.70	6,330	5	26.00	1,335	6	25	4,662	2	7	1,400	43	12,327
Louisa.....	3	1	50.00	600	1	30.00	360	1	5	1,550	2	7	1,400	8	2,000
Lucas.....	1	1	40.00	480	1	30.00	360	1	5	1,550	1	2	1,102	3	1,340
Lyon.....	4	2	50.00	1,200	1	35.00	140	1	5	1,550	1	2	1,102	3	1,340
Madison.....	3	1	40.00	480	2	29.00	507	1	5	1,550	1	12	5,000	15	5,987
Mahaska.....	1	1	40.00	480	2	29.00	507	1	5	1,550	1	12	5,000	15	5,987
Marion.....	3	3	58.30	2,580	3	19.00	332	1	9	1,904	2	17	7,914	22	38,790
Marshall.....	6	3	58.30	2,580	3	19.00	332	1	9	1,904	2	17	7,914	22	38,790
Mills.....	3	1	50.00	600	3	30.00	1,000	2	4	1,869	1	5	3,300	13	6,769
Mitchell.....	9	9	52.10	5,278	6	25.00	795	1	3	600	6	27	13,292	42	19,385
Monona.....	1	1	60.00	720	1	30.00	360	1	3	600	1	3	720	4	1,320
Monroe.....	1	1	60.00	720	1	30.00	360	1	3	600	1	3	720	4	1,320
Montgomery.....	1	1	75.00	900	1	30.00	180	1	3	600	1	3	720	2	1,080
Muscatine.....	3	3	46.66	1,680	1	35.00	420	3	18	3,040	3	11	4,600	33	9,740
O'Brien.....	6	2	67.50	1,260	1	15.00	180	1	8	1,247	1	8	1,247	11	2,687
Osceola.....	1	1	50.00	400	1	15.00	180	1	5	903	1	5	903	6	1,303
Page.....	6	2	55.00	1,220	1	15.00	180	2	9	2,223	1	2	1,102	12	3,623
Palo Alto.....	17	15	54.53	8,584	11	22.54	2,351	2	5	2,214	1	2	1,102	31	13,149
Plymouth.....	11	8	55.00	5,030	4	19.50	623	5	18	4,887	1	2	1,102	30	10,540
Pocahontas.....	8	4	53.75	2,580	2	22.50	300	3	25	5,927	1	2	1,102	31	8,807
Polk.....	5	4	58.75	2,670	2	37.50	700	3	11	2,100	1	15	7,000	17	5,470
Pottawattamie.....	5	4	52.50	2,520	3	33.33	740	2	13	3,373	1	15	7,000	35	13,633
Poweshiek.....	5	1	45.00	540	1	30.00	360	1	5	1,550	1	7	2,000	8	2,540
Ringgold.....	2	2	50.00	1,200	1	20.00	100	1	2	700	1	3	1,500	8	3,500
Sac.....	13	5	47.00	2,820	8	28.00	2,648	1	2	700	1	2	350	13	5,468
Scott.....	3	2	47.50	600	1	15.00	180	2	14	4,285	1	2	350	4	950
Shelby.....	7	2	87.50	2,100	1	15.00	180	2	14	4,285	1	2	350	17	6,565
Sioux.....	8	7	54.28	4,285	2	27.50	450	4	21	4,988	1	2	350	30	9,723
Story.....	13	9	61.67	5,820	10	29.00	2,910	6	42	13,493	1	2	350	61	22,223

TABLE NO. 4—CONTINUED.

COUNTIES.	BUTTER-MAKERS' AND ASSISTANTS' WAGES.						EXPENSE HAULING MILK.			EXPENSE HAULING CREAM.			EMPLOYEES' EXPENSE.		
	No. creameries.	Butter-makers reported.	Average wages per month.	Total paid but-ter-makers.	No. of assistants employed.	Average wages of assistants.	Total paid assistants.	Creameries re-ported.	No. employed not patrons.	Total paid for hauling milk.	Creameries re-ported.	No. employed.	Total paid for hauling cream.	Total employees.	Total paid em- ployes of all kinds.
Tama.....	8	3	41.67	1,250	1	30.00	210			4,400				4	1,460
Taylor.....	5	4	51.25	2,460	3	20.00	540	3	20	4,400				27	7,400
Union.....	5	4	50.00	2,400	9	30.30	2,970							13	5,370
Van Buren.....	3	1	40.00	480	1	33.00	330	1	1	316				3	1,126
Wapello.....	4	1	50.00	300										1	300
Warren.....	2				1	33.00	330	2	15	2,500				16	2,830
Washington.....	6	3	41.50	1,494	3	25.00	750	1	6	2,350	1	7	3,200	19	7,784
Wayne.....	4	3	50.00	1,100	2	32.50	650	2	43	6,431				47	8,181
Webster.....	9	2	45.00	620				1	6	1,400	2	9	2,400	17	4,420
Winnebago.....	8	6	58.33	4,000	5	21.40	1,180							11	5,180
Winneshiek.....	17	12	52.25	6,534	2	25.00	600	2	8	556	9	52	25,030	74	33,630
Woodbury.....	9	3	43.33	1,245				2	8	670	2	10	2,768	21	4,983
Worth.....	8	6	57.92	4,380	2	22.00	305							8	4,535
Wright.....	10	4	48.75	1,980	2		500	4	18	4,007				24	7,007
The State.....	793	479	\$53.63	\$ 234,151	280	\$20.20	\$ 53,392	305	1,457	\$ 405,014	58	323	\$ 126,061	2,539	\$ 878,618

A small decrease in the average value of the creameries of the state will be noted in the following summary and table. This is accounted for, as in previous reports, on the assumption that creamery managers and owners are coming more and more to report the value of their plants, not at first cost, but as worth the amount that it would take to replace them. The reports received range from \$2,000 to \$10,000, but most of the values of the creameries reported are very near the average given, \$3,024. The day of exorbitant prices for creamery building and for creamery machinery is gone, and it is confidently expected that future reports will still further reduce the average value of creameries. A reduction in the amount of capital necessary to start a creamery will certainly result in a further increase of the number of creameries.

The increase in the average number of months the creameries were operated is another gratifying feature of the following table.

Attention is called to the increase in the number of patrons per creamery, and the fact that the increase reported will very nearly account for the increase in the whole number of patrons reported.

The decrease in the average number of cows per patron and the very decided decrease in the total number of cows reported, while not encouraging, is in accordance with the other known facts in regard to the creamery output for the past year. The decrease in the net butter shipments for the last year amounts to 6,088,744 pounds, which is very nearly in the proportion of the decrease in the aggregate number of cows. No doubt the fact that young stock has for a considerable time been very high in price, and butter in the same time been correspondingly low, has induced some to raise more stock and make less butter. And the fact that butter has reached a higher price for the year past will, no doubt, cause an increase in the number of cows milked and the amount of butter made.

	1898.	1897.
Average value of creameries.....	\$ 3,024	\$ 3,103
Average value of skim stations.....	1,510	1,335
Total value of creameries and skim stations.....	2,641,379	2,566,149
Average months creameries were operated.....	11	10.2
Average patrons per creamery.....	116	113
Total number of patrons of creameries.....	91,998	87,349
Average number of cows per patron.....	7	+
Average number of cows per creamery.....	798	964
Total number of cows.....	632,814	745,173

TABLE NO. 5.

Value of plants, time operated, number of patrons and number of cows.

COUNTIES.	VALUE OF PLANTS.						TIME OPERATED.		PATRONS.			COWS.				
	No. of cream- eries.	No. reporting.	Value of cream- eries reported.	No. of skim sta- tions.	No. reporting.	Value of skim stations re- ported.	Total value of both.	No. reporting.	Av. No. months operated.	No. creameries reporting.	Total No. of patrons.	Av. No. of pa- trons per creamery.	No. creameries reporting.	No. of cows per patron.	T. tal No. of cows reported.	Av. No. of cows per creamery.
The state.....	793	582	\$1,693,650	161	59	\$90,100	\$1,789,750	575	11.2	504	58654	116	374	*7	298,392	798
Adair.....	5	3	14,800	7	4	6,200	21,000	3	11.6	3	837	279	1	10	1,800	1,800
Adams.....	2	1	4,000	5	2	3,000	7,000	1	12.0	1	120	120	5	5	6,697	1,339
Allamakee.....	9	6	18,600	...	...	...	18,600	6	12.0	6	1,295	216	...	...	...	...
Appanoose.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Audubon.....	9	8	24,000	2	...	...	24,000	7	8.8	6	725	121	4	7	3,559	889
Benton.....	11	8	24,600	2	1	1,500	26,100	9	10.2	6	567	94	6	8	4,565	761
Black Hawk.....	18	14	41,100	...	...	...	41,100	13	11.2	13	1,353	101	12	9	11,054	921
Boone.....	6	4	12,000	2	1	1,000	13,000	4	12.0	3	385	128	1	9	1,412	1,412
Bremer.....	26	23	69,900	...	...	...	69,900	23	12.0	21	1,594	76	18	9	11,343	797
Buchanan.....	16	10	36,500	1	1	2,500	39,000	9	11.8	9	1,437	159	6	8	6,670	1,112
Buena Vista.....	8	8	25,800	1	1	2,000	27,800	8	10.7	7	869	124	3	9	3,343	1,114
Butler.....	22	17	49,500	...	...	...	49,500	17	11.5	15	1,326	88	13	7	6,958	535
Calhoun.....	8	6	15,400	3	...	...	15,400	6	12.0	6	467	78	3	8	1,225	408
Carroll.....	11	5	18,000	2	1	2,000	20,000	5	12.0	4	415	104	1	10	1,000	1,000
Cass.....	1	1	8,000	6	5	8,000	16,000	1	11.0	1	700	700	...	...	...	...
Cedar.....	6	4	10,200	4	3	3,600	13,800	4	10.0	3	639	213	3	4	2,840	947
Cerro Gordo.....	11	9	24,000	1	2	2,500	26,500	10	11.6	10	945	94	5	7	2,195	439
Cherokee.....	7	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...
Chickasaw.....	19	16	52,000	1	...	...	52,000	16	11.8	14	1,639	117	11	...	10,800	982
Clarke.....	2	1	3,000	3	3	3,000	6,000	1	12.0	1	375	375	1	3	1,132	1,132
Clay.....	9	4	11,700	...	...	...	11,700	4	12.0	3	263	88	2	6	1,250	625
Clayton.....	19	19	64,900	1	...	...	64,900	19	11.9	18	2,212	123	15	7	14,270	951
Clinton.....	9	5	8	9.0	8	485	61	8	8	3,175	397
Crawford.....	5	4	13,000	3	1	1,000	14,000	4	12.0	3	185	62	2	8	633	317

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Dallas.....	5	5	17,200	6	1	1,300	18,500	5	11.6	5	624	125	3	8	2,150	717
Davis.....	3	3	8,000	1	1	1,000	9,000	3	12.0	1	50	50	1	5	250	250
Decatur.....	2	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Delaware.....	31	17	49,000	...	...	...	49,000	17	12.0	17	1,181	69	13	9	9,994	769
Des Moines.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dickinson.....	4	4	12,200	...	...	...	12,200	3	12.0	4	459	115	2	8	2,060	1,030
Dubuque.....	23	19	49,150	...	...	...	49,150	19	11.3	13	969	75	14	9	9,217	658
Emmet.....	6	3	8,000	...	...	...	8,000	3	12.0	3	271	90	2	7	1,460	730
Fayette.....	22	16	57,000	1	1	2,500	59,500	16	11.9	14	1,812	129	11	7	12,579	1,144
Floyd.....	7	5	12,800	...	...	...	12,800	5	12.0	5	700	140	5	6	4,710	942
Franklin.....	10	9	31,350	1	...	...	31,350	10	12.0	9	1,111	123	7	5	4,647	664
Fremont.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Greene.....	8	6	18,700	1	1	1,300	20,000	6	12.0	5	536	107	2	4	850	425
Grundy.....	16	12	36,700	3	...	...	36,700	12	10.0	12	949	79	12	9	8,875	740
Guthrie.....	5	2	8,500	7	1	1,500	10,000	2	11.0	2	175	88	1	7	850	850
Hamilton.....	10	7	24,600	2	1	1,500	26,100	7	11.0	5	552	110	5	7	3,477	695
Hancock.....	9	6	16,300	2	...	...	16,300	6	9.3	6	486	81	4	5	1,850	410
Hardin.....	12	10	33,500	3	1	2,000	35,500	10	11.6	8	1,430	179	6	5	6,640	1,106
Harrison.....	4	3	12,300	...	...	...	12,300	3	10.6	2	235	118	1	5	621	621
Henry.....	3	3	7,100	1	1	1,500	8,600	3	12.0	2	169	85	2	3	433	217
Howard.....	8	7	19,000	1	1	1,200	20,200	7	11.1	5	902	180	4	5	3,350	837
Humboldt.....	8	8	25,900	1	...	...	25,900	8	10.7	8	702	88	5	6	2,670	534
Ida.....	5	4	13,000	...	...	...	13,000	4	12.0	3	440	147	3	5	2,050	683
Iowa.....	6	4	15,200	...	...	...	15,200	4	11.5	1	400	400	1	12	500	500
Jackson.....	12	11	27,300	7	2	2,700	30,000	12	10.4	9	894	99	5	7	3,559	712
Jasper.....	8	5	12,900	...	...	...	12,900	5	12.0	5	613	123	...	...	...	...
Jefferson.....	8	7	17,800	1	1	2,000	19,800	7	10.5	4	442	110	4	6	2,435	609
Johnson.....	4	2	3,500	4	...	...	3,500	2	12.0	1	80	80	...	...	...	...
Jones.....	18	12	35,300	12	1	1,300	36,600	14	10.7	13	1,381	106	10	10	5,783	578
Keokuk.....	3	3	12,000	...	...	...	12,000	3	12.0	3	380	127	2	4	1,500	650
Kossuth.....	21	15	45,500	...	...	...	45,500	15	12.0	14	1,119	80	13	10	10,164	782
Lee.....	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Linn.....	25	18	41,700	5	1	1,200	42,900	18	11.5	16	820	51	9	10	4,921	547
Louisa.....	3	2	2,000	...	...	...	2,000	2	12.0	2	260	130	1	5	750	750
Lucas.....	1	1	3,500	...	...	...	3,500	1	12.0	1	100	100	1	10	1,000	1,000
Lyon.....	4	2	4,800	...	...	...	4,800	2	12.0	2	155	78	2	6	900	450
Madison.....	3	1	1,500	1	...	...	1,500	1	9.0	1	75	75	...	...	...	...
Mahaska.....	1	1	5,600	...	...	...	5,600	1	12.0	1	400	400	1	5	2,000	2,000
Marion.....	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Marshall.....	6	3	12,000	5	12,000	3	12.0	3	740	247	3	7	5,200	1,733
Mills.....	3	3	5,500	1	5,500	3	9.0	2	726	343	2	5	3,730	1,865

* Nearly.

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TABLE NO. 5—CONTINUED.

COUNTIES.	VALUE OF PLANTS.						TIME O-P-ERATED.		PATRONS.			COWS.				
	No of cream-eries.	No. reporting.	Value of cream-eries reported	No. of skim sta-tions.	No. reporting.	Value of skim stations re-ported.	Total value of both.	No. reporting.	Av. No. months operated.	No. creameries reporting.	Total No. of patrons.	Av. No. of pa-trons per creamery.	No. creameries reporting.	No. of cows per patron.	Total No. of cows reported.	Av. No. of cows per creamery.
Mitchell.....	9	8	14,600	.....	.....	.....	14,600	8	12.0	8	1,836	229	5	7	7,247	1,449
Monona.....	1	1	4,000	.....	.....	.....	4,000	1	12.0	1	82	82	1	4	340	340
Monroe.....	1	1	2,000	.....	.....	.....	2,000	1	12.0	1	80	80	1	4	300	300
Montgomery.....	1	1	2,000	2	.....	.....	2,000	1	12.0	1	100	100	1	6	600	600
Muscatine.....	3	3	9,500	2	1	1,000	10,500	3	12.0	2	485	242	3	6	3,130	1,043
O'Brien.....	6	3	12,800	.....	.....	.....	12,800	3	10.0	2	99	49	2	11	1,150	575
Osceola.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Page.....	6	3	9,000	.....	.....	.....	9,000	4	9.7	3	344	115	2	4	1,060	530
Palo Alto.....	17	14	42,600	.....	.....	.....	42,600	14	11.7	14	1,239	89	9	9	7,574	842
Plymouth.....	11	8	26,200	.....	.....	.....	26,200	8	11.6	8	727	91	5	7	3,256	651
Pocahontas.....	8	5	15,200	1	.....	.....	15,200	6	11.6	5	676	135	3	6	2,250	750
Polk.....	5	4	12,500	3	1	1,000	13,500	4	10.0	4	390	98	2	7	950	475
Pottawattamie.....	5	4	11,500	.....	.....	.....	11,500	4	12.0	3	810	270	3	7	5,673	1,891
Poweshiek.....	5	2	4,500	1	.....	.....	4,500	2	12.0	1	65	65	1	6	400	400
Ringgold.....	2	2	4,800	1	.....	.....	4,800	2	11.0	1	78	78	.....	.....	.....	.....
Sac.....	13	9	28,000	.....	.....	.....	28,000	9	12.0	9	695	77	7	7	4,075	582
Scott.....	3	2	6,000	.....	.....	.....	6,000	2	6.0	2	105	53	2	7	705	352
Shelby.....	7	3	7,500	1	.....	.....	7,500	3	12.0	3	338	113	1	7	660	560
Sioux.....	8	8	23,000	.....	.....	.....	23,000	8	11.3	6	511	85	5	6	2,286	457
Story.....	13	9	34,500	2	.....	.....	34,500	9	11.2	7	903	129	5	7	4,225	845
Tama.....	8	3	8,000	3	1	1,000	9,000	5	10.2	3	405	135	2	3	1,100	550
Taylor.....	5	4	11,800	1	.....	.....	11,800	4	12.0	3	315	105	1	5	600	600
Union.....	5	4	20,500	9	9	16,100	36,600	4	12.0	4	1,165	291	3	5	3,850	1,283
Van Buren.....	3	2	7,000	1	7,000	2	7.5	2	365	182	2	4	1,350	675

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Wapello.....	4	1	2,000	2,000	1	5.0	1	22	22	1	10	201	201
Warren.....	2	2	5,000	3	3	4,000	9,000	2	12.0	2	320	160	1	7	500	500
Washington.....	6	4	17,500	...	...	...	17,500	4	12.0	4	1,028	257	3	4	2,580	860
Wayne.....	4	2	6,500	4	...	...	6,500	2	11.0	2	265	133	...	...	...	...
Webster.....	9	5	10,200	...	...	...	10,200	5	10.0	2	350	175	1	7	950	950
Winneshiek.....	8	6	16,200	7	4	8,200	24,400	6	11.1	6	786	131	6	7	5,421	904
Winnebago.....	17	12	32,500	...	...	...	32,500	12	11.0	12	1,571	131	8	8	8,867	1,108
Winneshiek.....	9	3	8,500	...	...	...	8,500	3	9.0	3	225	75	2	5	784	392
Woodbury.....	9	6	15,700	1	...	...	15,700	6	12.0	6	674	112	5	9	3,957	791
Worth.....	8	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wright.....	10	8	21,200	1	1	1,500	22,700	7	11.2	6	559	93	4	8	2,515	629
The state.....	793	562	\$1,699,650	161	59	\$90,100	\$1,789,750	575	11.0	504	58654	116	374	*7	298,382	798

* Nearly.
Average value of creameries, \$3,024.
Average value of skim stations, \$1,510.
At this valuation 793 creameries are worth \$2,393,269.
At this valuation 161 skim stations are worth \$243,110.
Total value of all plants, \$2,641,379.

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On the basis of the following table, it will be seen that the creameries of Iowa used a total of nearly 60,000 tons of coal during the year. . Of this amount, about two-fifths was foreign coal, and the remainder was from Iowa mines. The fact that Iowa coal is not used more than it is arises from the lack of railroad facilities to the Iowa mines. A large part of the territory of the state is really nearer by railroad to the mines of Illinois than to the Iowa mines, and, as a consequence, the foreign coal is cheaper and is used instead of Iowa coal. Nearly 86 per cent, or 676, of the creameries burn coal, and 106 are reported as burning wood.

TABLE No 6.
Separators, Testers and Fuel.

COUNTIES	NO. OF CREAM-ERIES.		SEPARATORS.					TESTERS		FUEL.				
	Number of cream-eries operating separators.	Number report-ing.	Total number of separators re-ported.	De Laval.	Sharples.	Jumbo.	Reid.	Babcock.	Russian.	Creameries re-ported.	Iowa coal, tons.	Foreign coal, tons.	Total tons of coal used.	Number cream-eries using wood.
The state.....	888	406	1,183	735	236	24	197	425	34	433	26,367	11,548	37,915	64
Adair.....	12	3	11	8	3	.....	.....	1	.....	2	172	.....	172	.....
Adams.....	7	1	3	3	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Allamakee.....	5	3	9	4	.....	.....	5	3	1	4	.....	120	120	3
Appanoose.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Audubon.....	10	4	9	9	.....	.....	.....	4	.....	5	282	80	362	.....
Benton.....	12	7	14	5	.....	.....	9	7	.....	6	552	105	657	2
Black Hawk.....	18	14	37	25	9	.....	3	13	1	13	535	974	1,509	1
Boone.....	8	4	9	7	.....	.....	2	4	.....	4	299	.....	299	1
Bremer.....	26	23	60	39	11	2	8	11	2	19	.....	1,984	1,984	2
Buchanan.....	16	10	30	14	1	2	13	7	1	6	410	160	570	.....
Buena Vista.....	9	8	20	17	.....	2	1	7	.....	3	435	35	470	2
Butler.....	22	17	40	23	14	.....	3	15	1	14	285	751	1,036	.....
Calhoun.....	11	6	8	5	3	4	1	5	490	490
Carroll.....	13	4	6	2	4	3	1	80	80
Cass.....	7	1	14	14	1	1	250	250
Cedar.....	8	3	7	5	1	1	1	4	327	130	457

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Cerro Gordo.....	12	4	9	6	2	1	5	5	379	80	459
Cherokee.....	9	4	9	9	3	1	2	195	15	210
Chickasaw.....	19	13	34	31	3	13	12	100	1,022	1,122
Clarke.....	5	1	5	5	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Clay.....	9	3	6	5	1	.....	.....	3	1	.....	.....	.....	.....	.....
Clayton.....	19	18	39	23	2	2	12	13	3	17	575	40	615	10
Clinton.....	14	8	12	6	5	.....	1	7	1	8	.....	530	530	.....
Crawford.....	8	4	8	6	2	.....	.....	3	.....	.....	195	.....	195	.....
Dallas.....	11	5	9	6	1	2	.....	5	.....	3	414	.....	414	.....
Davis.....	3	2	3	1	1	1	1	3	.....	2	50	45	95	.....
Decatur.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Delaware.....	31	17	40	18	8	.....	14	15	1	13	418	602	1,020	5
Des Moines.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dickinson.....	4	4	7	7	.....	.....	.....	4	.....	2	110	.....	110	.....
Dubuque.....	23	17	43	8	18	.....	17	11	1	12	20	195	215	9
Emmet.....	6	3	6	4	2	.....	.....	3	.....	3	236	35	271	.....
Fayette.....	23	17	47	16	10	.....	21	15	1	10	37	540	577	4
Floyd.....	6	5	9	6	3	.....	.....	2	.....	3	180	80	260	1
Franklin.....	10	8	18	12	2	.....	3	8	1	8	711	75	786	.....
Fremont.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Greene.....	9	6	23	19	4	.....	.....	6	.....	4	383	.....	386	.....
Grundy.....	19	13	26	14	1	4	7	12	.....	11	522	581	1,103	.....
Guthrie.....	12	2	4	3	1	.....	.....	2	.....	2	230	.....	230	.....
Hamilton.....	12	7	16	13	2	.....	1	5	1	5	646	.....	646	.....
Hancock.....	10	5	9	7	2	.....	.....	5	.....	5	402	40	442	.....
Hardin.....	14	10	20	20	.....	.....	.....	9	.....	8	830	.....	830	.....
Harrison.....	4	2	4	2	1	1	.....	1	1	2	125	.....	125	1
Henry.....	4	3	4	3	.....	1	.....	3	.....	1	40	.....	40	.....
Howard.....	6	5	11	11	.....	.....	.....	5	.....	6	57	237	294	.....
Humboldt.....	9	7	16	15	.....	.....	1	13	.....	8	779	.....	779	.....
Ida.....	5	4	7	5	2	.....	.....	1	2	3	385	.....	385	.....
Iowa.....	2	1	1	.....	1	.....	.....	.....	.....	3	135	.....	135	1
Jackson.....	18	11	29	2	19	.....	8	9	1	6	.....	100	100	5
Jasper.....	8	5	9	9	.....	.....	.....	4	.....	2	180	.....	180	.....
Jefferson.....	9	7	10	9	1	.....	.....	6	.....	3	106	.....	106	1
Johnson.....	7	1	1	.....	.....	.....	1	1	.....	1	50	.....	50	.....
Jones.....	30	14	76	7	55	14	10	2	11	1,221	288	1,509	3
Keokuk.....	2	2	2	2	2	3	289	289
Kossuth.....	21	15	34	33	1	14	12	1,175	403	1,578

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TABLE No. 6—CONTINUED.

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COUNTIES.	NO. OF CREAM-ERIES		SEPARATORS.				TESTERS		FUEL.					
	Number of cream-eries operating separators.	Number report-ing.	Total number of separators re-ported.	De Laval.	Sharples.	Jumbo.	Reid.	Babcock.	Russian.	Creameries re-ported.	Iowa coal, tons.	Foreign coal, tons.	Total tons of coal used.	Number cream-eries using wood.
Lee.....	1													
Linn.....	30	14	28	9			19	9		11	352	351	703	*3
Louisa.....	0									2	15		15	1
Lucas.....	1	1	2	2				1		1	144		144	
Lyon.....	4	2	4	4				1		2	43	105	148	
Madison.....	4													
Mahaska.....	0									1	100		100	
Marion.....	1													
Marshall.....	9	1	2				2	1		3	370		370	
Mills.....	1	1	1		1			1		1	50		50	
Mitchell.....	3	2	3	3				2		2		640	640	
Monona.....	1	1	1		1			1		1	105		105	
Monroe.....	1	1	1	1				1		1	70		70	
Montgomery.....	3													
Muscatine.....	5	3	5	3	1			2		3	332		332	
O'Brien.....	6	3	5	4	1			2		2	54		54	
Osceola.....	1	1	2	2				1		2		65	65	
Page.....	6	3	5	3	1	1		3		3	127	90	217	
Palo Alto.....	17	14	20	25	2		2	13		10	1,034	130	1,164	
Plymouth.....	11	8	13	8	3		2	5	1	7	427	234	661	
Pocahontas.....	9	6	11	7			4	6		3	337		337	
Polk.....	8	4	8	6	2			2	1	3	267		267	
Pottawattamie.....	4	3	5	2	3			2	1	3	170	80	250	
Poweshiek.....	4	2	3	1			2	1	1	2	178		178	
Ringgold.....	2	1	1	1				1		2	155		155	
Sac.....	13	7	19	16			3	6		9	619	96	715	
Scott.....	2	1	1	1				1		2	25	26	51	

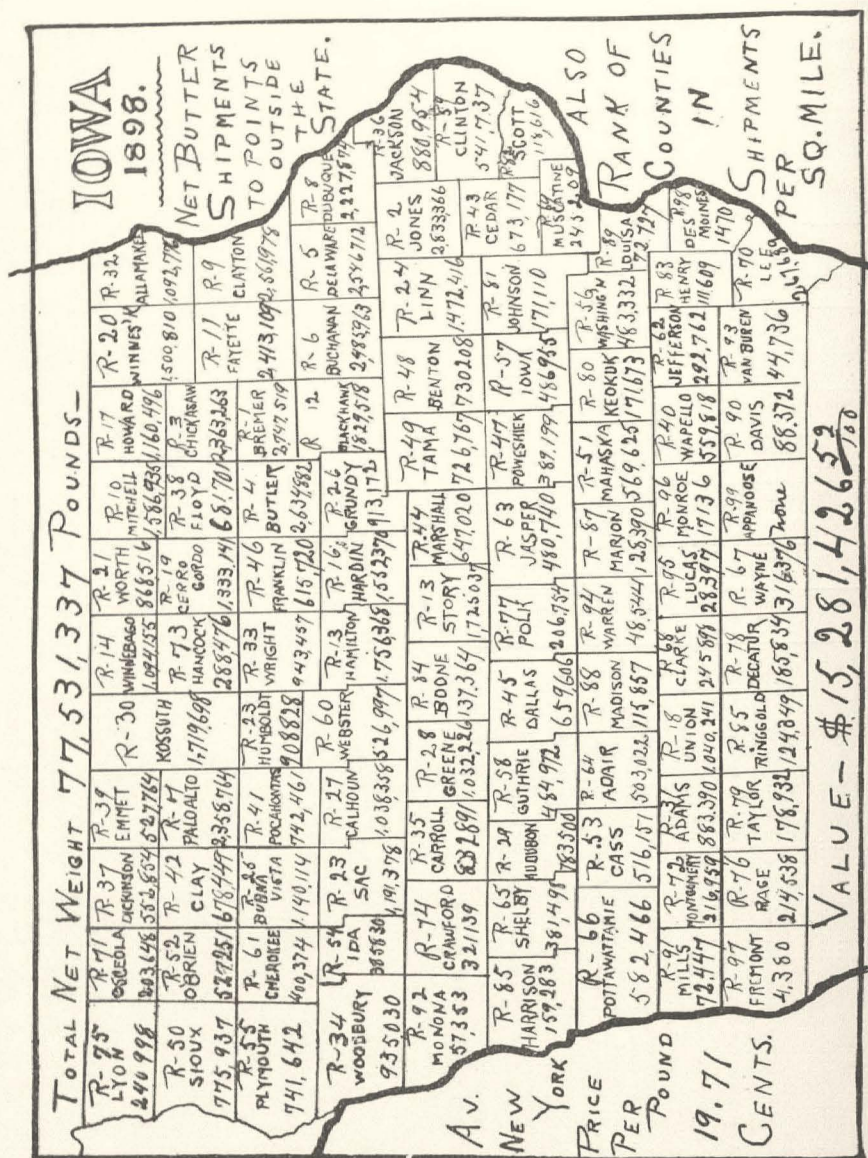
Shelby.....	8	3	6	6				3		4	320		320	
Sioux.....	8	7	13	3	10			4		6	536		536	
Story.....	15	9	20	16	2		2	9	1	7	981		981	
Tama.....	9	3	6	10	1		1	2	1	4	300		300	
Taylor.....	6	4	6	5	1			4		1	100		100	
Union.....	14	3	19	19				3	1	3	1,106		1,106	
Van Buren.....	4	1	1			1				1		40	40	
Wapello.....	4	1	1		1			1		1	42		42	
Warren.....	5	2	4	3		1		2		1	65		65	
Washington.....	4	2	3	1	2			2		3	130		130	1
Wayne.....	8	3	13	10			3	3		2	576		576	
Webster.....	7	3	6	3	2		1	2		3	254		254	
Winnebago.....	15	5	18	16	2			6		6	427	364	791	
Winneshiek.....	6	5	7	7				6		11	400	30	430	6
Woodbury.....	9	3	3	2	1			3		3	101		101	
Worth.....	8	5	11	8	1		2	5		5	408	50	458	2
Wright.....	11	7	15	9		1		7		4	352		352	
The state.....	888	406	1,183	736	225	24	197	425	34	433	26,357	11,548	37,915	64

* One creamery run by water power.

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RAILROAD BUTTER SHIPMENTS.

The courtesy of the different railroads of the state in reporting the total gross pounds of butter shipped from points within the state to points outside of the state is very highly appreciated by this office. These are the most satisfactory and reliable statistics received from any source and may be relied upon as showing the real condition of the butter-making industry of the state. The shipments are reported in gross, and a deduction of 16 per cent is made to show the net butter shipments to points outside the state. In the following tables the figures showing railroad butter shipments must be understood to be accurate and complete.

Following is a short table showing comparisons of net butter shipments of the state for the years 1890 to 1898 inclusive, and also a table showing the butter shipments by counties and comparisons with the butter shipments of the counties for the previous year. In every case the year ends with the first day of October.

TABLE No. 7.

Table showing total net butter shipments of the state for the years 1890 to 1898 inclusive, from Iowa to points outside the state: also increase or decrease as compared with the year preceding.

	YEARS ENDING OCTOBER 1.	Net pounds of butter shipped.	Increase over pre- ceding year.	Decrease from pre- ceding year.
1890	71,255,796	.....	2,565,080
1891	68,690,716	.....	8,577,785
1892	60,112,931	.....	5,540,029
1893	54,572,902	.....	63,485
1894	54,509,417	.....
1895	66,497,108	11,987,691	
1896	80,032,916	13,535,808	
1897	83,620,081	3,587,165	
1898	77,531,337	.....	6,088,744

The railroads report the shipments of butter out of the state in gross, and the following table contains the gross butter shipments by counties, together with a comparison with the shipments of the previous year. It will be seen that thirty-seven counties have made an increase and sixty-one counties have less

butter than in the previous year. Appanoose county had no butter shipments in either year. In comparing this table with the table of butter made as reported by the creameries, it should be borne in mind that the year for which the creameries reported was from May 1, 1897, to May 1, 1898; and that the year for which the railroads reported ended October 1, 1898. Any apparent discrepancies will be explained by this fact.

The increases are found to be mostly in those counties which have reported a small amount of butter in former years, while the decreases have been for the greater part in those counties where creameries have been long established. Of the counties reporting more than 1,500,000 pounds of butter shipped for the year 1897, only Hamilton, Hardin, Palo Alto and Jones show an increase. The other eighteen counties reporting for 1897 more than 1,500,000 pounds, show decreases up to 850,000 pounds; while of those making less than 1,000,000, thirty-one out of sixty-three show increases up to 425,000 pounds. The creamery business is increasing in those localities where it has been little tried before, and the decrease in the old counties is accounted for on the ground of the different conditions and can be only a temporary matter.

TABLE No. 8.

COUNTIES.	NUMBER OF CREAMERIES FOR 1897 AND 1898, WITH INCREASE AND DECREASE				GROSS POUNDS OF BUTTER SHIPPED OUT OF THE STATE FOR THE YEARS ENDING SEPTEMBER 30, 1897 AND 1898, SHOWING INCREASE AND DECREASE BY COUNTIES.			
	1897.	1898.	Increase.	Decrease.	1897.	1898.	Increase.	Decrease.
The state.....	891	954	101	38	99,547,684	92,269,211	4,319,869	11,568,372
Adair.....	9	12	3	.....	485,888	598,835	112,977	.....
Adams.....	8	7	.....	1	716,929	694,512	.....	22,414
Allamakee.....	9	9	.....	.....	1,610,804	1,300,924	.....	309,880
Appanoose.....	.....	.....	.....	.....	.....	.....	.....	.....
Audubon.....	6	11	5	.....	932,502	932,738	236	.....
Benton.....	12	13	1	.....	747,455	869,295	121,840	.....
Black Hawk.....	19	18	.....	1	2,486,560	2,177,997	.....	308,563
Boone.....	7	8	1	.....	190,897	163,529	.....	27,368
Bremer.....	24	20	.....	4	3,284,269	3,270,836	.....	13,443
Buchanan.....	15	17	2	.....	3,743,614	2,959,480	.....	783,134
Buena Vista.....	10	9	.....	1	1,531,063	1,337,278	.....	173,784
Butler.....	21	22	1	.....	3,897,313	3,136,701	.....	760,549
Calhoun.....	7	11	4	.....	1,051,677	1,236,140	174,463	.....
Carroll.....	12	13	1	.....	1,065,768	991,357	.....	74,431
Cass.....	7	7	.....	.....	318,507	614,465	295,958	.....
Cedar.....	11	10	.....	1	1,013,460	801,491	.....	212,049
Cerro Gordo.....	11	12	1	.....	1,710,620	1,587,072	.....	123,548
Cherokee.....	7	9	2	.....	621,394	476,656	.....	144,738
Chickasaw.....	20	20	.....	.....	3,451,397	2,813,498	.....	638,999
Clarke.....	4	5	1	.....	536,468	245,898	.....	290,570
Clay.....	9	9	.....	.....	599,647	807,677	211,630	.....
Clayton.....	21	20	.....	1	3,441,667	3,049,074	.....	411,693
Clinton.....	15	14	.....	1	995,953	614,025	.....	381,928
Crawford.....	8	8	.....	.....	358,380	382,308	23,928	.....
Dallas.....	6	11	5	.....	986,985	781,245	.....	205,740
Davis.....	3	4	1	.....	86,689	103,305	18,616	.....
Decatur.....	2	3	1	.....	14,170	135,334	171,664	.....
Delaware.....	27	31	4	.....	3,295,556	3,031,803	.....	263,756
Des Moines.....	.....	.....	.....	.....	187,243	1,470	.....	185,773
Dickinson.....	3	4	1	.....	527,805	638,150	110,345	.....
Dubuque.....	26	23	.....	3	2,845,116	2,623,521	.....	221,595
Emmet.....	4	6	2	.....	585,995	628,220	41,225	.....
Fayette.....	23	23	.....	.....	3,379,338	2,872,749	.....	506,589
Floyd.....	6	7	1	.....	614,112	811,549	197,437	.....
Franklin.....	11	11	.....	.....	733,630	733,000	.....	630
Fremont.....	.....	.....	.....	.....	2,895	4,880	1,485	.....
Greene.....	9	9	.....	.....	1,473,100	1,228,840	.....	244,260
Grundy.....	18	19	1	.....	1,410,995	1,087,110	.....	323,885
Guthrie.....	11	12	1	.....	464,226	577,848	113,622	.....
Hamilton.....	10	12	2	.....	2,674,384	2,090,914	.....	583,470
Hancock.....	8	11	3	.....	322,898	94,834	.....	228,064
Hardin.....	12	15	3	.....	1,732,701	1,848,079	115,378	.....
Harrison.....	7	4	.....	3	176,040	189,623	13,583	.....
Henry.....	2	4	2	.....	82,445	132,888	50,443	.....
Howard.....	7	9	2	.....	1,799,986	1,381,543	.....	418,443
Humboldt.....	10	9	.....	1	994,020	1,081,938	87,918	.....
Ia.....	5	5	.....	.....	467,376	459,321	.....	8,055
Iowa.....	6	6	.....	.....	705,903	579,708	.....	126,195
Jackson.....	18	19	1	.....	1,063,277	1,048,735	.....	14,522
Jasper.....	11	8	.....	3	786,782	372,969	.....	413,813
Jefferson.....	10	9	.....	1	822,613	348,087	.....	474,526
Johnson.....	9	8	.....	1	163,620	203,702	40,082	.....
Jones.....	26	30	4	.....	3,171,202	3,573,095	201,893	.....

TABLE No. 8—CONTINUED.

	NUMBER OF CREAMERIES FOR 1897 AND 1898, WITH IN- CREASE AND DECREASE.				GROSS POUNDS OF BUTTER SHIPPED OUT OF THE STATE FOR THE YEARS ENDING SEPTEMBER 30, 1897 AND 1898, SHOWING INCREASE AND DECREASE BY COUNTIES.			
	1897.	1898.	Increase.	Decrease.	1897.	1898.	Increase.	Decrease.
Keokuk.....	5	3	..	2	345,895	294,373	.....	141,523
Kossuth.....	30	21	1	9	2,518,619	2,047,390	.....	471,229
Lee.....	2	3	1	..	453,700	318,677	.....	135,113
Linn.....	2	3	1	..	2,308,347	1,738,576	.....	465,371
Louisia.....	3	3	..	..	118,975	86,589	.....	32,386
Lucas.....	1	1	..	..	73,340	33,806	.....	39,534
Lyons.....	6	4	1	2	280,562	286,902	6,340	.....
Madison.....	4	4	..	..	108,856	137,225	29,069	.....
Mahaska.....	1	1	..	..	333,323	678,125	434,802	.....
Marion.....	1	1	2	1	225,689	132,845	.....	72,844
Marshall.....	7	11	4	..	915,679	770,392	.....	145,417
Mills.....	3	4	1	..	84,535	75,447	.....	13,388
Mitchell.....	8	9	1	..	2,100,805	1,880,308	.....	211,597
Monona.....	2	1	1	..	53,597	68,377	14,280	.....
Monroe.....	1	1	..	..	18,785	20,400	1,615	.....
Montgomery.....	1	2	1	..	329,697	258,284	.....	71,413
Muscatine.....	6	5	1	..	393,430	191,915	.....	101,505
O'Brien.....	4	5	1	..	431,060	627,680	196,620	.....
Oscola.....	4	1	3	..	104,120	245,488	139,318	.....
Page.....	7	6	1	..	297,898	214,538	.....	83,260
Palo Alto.....	16	17	1	..	1,899,239	2,938,052	908,813	.....
Plymouth.....	10	11	1	..	949,315	883,907	.....	66,408
Pocahontas.....	9	9	..	..	859,171	883,882	24,711	.....
Polk.....	6	8	2	..	241,423	296,794	.....	34,671
Pottawattamie.....	5	5	..	..	608,623	699,412	.....	87,119
Poweshiek.....	6	6	..	..	600,688	463,332	.....	37,356
Ringgold.....	4	3	1	..	103,225	124,340	21,114	.....
Sac.....	14	13	1	..	1,441,747	1,418,307	.....	23,440
Scott.....	4	3	1	..	129,404	141,210	14,806	.....
Shelby.....	6	8	2	..	310,559	554,164	.....	97,448
Sioux.....	9	9	..	..	1,021,142	925,734	.....	368,822
Story.....	16	15	1	..	5,423,437	2,053,615	.....	.....
Tama.....	8	11	3	..	685,440	865,199	179,749	.....
Taylor.....	8	6	2	..	235,341	178,832	.....	56,509
Union.....	13	14	1	..	1,306,899	1,238,382	.....	152,427
Van Buren.....	3	4	1	..	75,476	53,257	.....	22,219
Wapello.....	5	4	1	..	1,009,110	699,450	.....	342,660
Warren.....	4	5	1	..	121,300	57,790	.....	73,510
Washington.....	5	6	1	..	692,785	675,295	.....	47,370
Wayne.....	6	8	2	..	313,542	319,376	2,834	.....
Weber.....	6	9	3	..	912,137	627,377	.....	284,760
Winnebago.....	12	15	3	..	1,199,676	1,269,592	162,689	.....
Wineshiek.....	12	17	5	..	2,091,503	1,786,678	.....	304,827
Woodbury.....	6	9	3	..	1,970,014	1,113,131	.....	856,883
Worth.....	10	9	1	..	1,062,257	1,033,945	.....	28,309
Wright.....	9	11	2	..	1,297,995	1,123,163	.....	114,832
The State.....	891	954	101	38	99,547,684	92,299,211	4,319,899	11,368,372

Net decrease in butter shipments, 7,248,473 pounds.

TABLE No. 9.

NET BUTTER SHIPMENTS BY COUNTIES AND RANK—AREA OF COUNTIES.

Showing pounds of butter shipped per square mile and rank of counties; also total net butter shipments for the state and net pounds per square mile, for the year ending September 30, 1898.

	Total net ship- ments of but- ter for the year.	Rank by total lbs. shipped.	Area of square miles in coun- ties.	Pounds per square mile.	Rank by lbs. per square mile.
The state.....	77,531,337	.....	56,025	1,384	.....
Adair.....	503,022	57	779	648	64
Adams.....	881,200	32	432	1,679	31
Allamakee.....	1,696,776	24	538	1,661	32
Appanoose.....	99	516	99	516	99
Audubon.....	783,500	36	443	1,769	29
Benton.....	730,298	40	720	1,014	48
Black Hawk.....	1,829,518	11	576	3,176	12
Boone.....	117,264	80	576	205	53
Bremer.....	2,747,519	2	432	6,361	1
Buchanan.....	2,465,963	3	576	4,316	6
Bureau Vista.....	1,140,114	22	576	1,970	25
Butler.....	2,634,882	3	576	4,572	4
Calhoun.....	1,638,358	26	576	1,803	27
Carroll.....	832,891	35	576	1,446	35
Cass.....	5,4151	56	576	936	53
Cedar.....	673,177	44	576	1,169	43
Cerro Gordo.....	1,333,141	19	576	2,314	19
Charoite.....	690,574	63	576	1,200	61
Chickasaw.....	2,363,953	8	504	4,689	3
Clarke.....	245,898	71	432	569	68
Clay.....	678,449	48	576	1,178	45
Clayton.....	2,561,978	4	729	3,519	9
Clinton.....	541,737	52	698	776	59
Crawford.....	321,139	66	720	448	74
Dallas.....	659,666	45	588	1,122	45
David.....	88,478	79	504	176	80
Decatur.....	183,534	78	534	345	78
Delaware.....	2,548,712	5	576	4,421	5
Des Moines.....	99	516	99	516	99
Dickinson.....	532,854	51	404	1,368	37
Dubuque.....	2,227,874	10	601	3,707	8
Emmet.....	557,764	53	494	1,306	39
Fayette.....	2,413,190	7	720	3,338	11
Floyd.....	691,701	42	604	1,153	38
Franklin.....	615,720	47	576	1,069	46
Fremont.....	99	516	99	516	99
Greene.....	1,032,226	37	576	1,792	28
Grundy.....	913,172	30	564	1,612	36
Guthrie.....	484,972	59	593	818	58
Hamilton.....	1,756,368	12	576	3,049	13
Hancock.....	258,476	69	576	501	73
Hardin.....	1,532,370	16	576	2,662	16
Harrison.....	159,228	82	504	312	83
Henry.....	111,969	88	432	258	86
Howard.....	1,160,036	21	478	2,428	17
Humboldt.....	908,528	31	432	2,104	23
Ia.....	295,830	64	432	681	54
Iowa.....	480,953	58	584	834	57
Jackson.....	880,954	33	638	1,381	36

TABLE No. 9—CONTINUED

COUNTIES.	Total net ship- ments of but- ter for the year.	Rank by total lbs. shipped	Area of square miles in coun- ties.	Pounds per square mile	Rank by lbs per square mile.
Jasper.....	480,740	61	730	659	63
Jefferson.....	292,762	68	432	678	62
Johnson.....	171,110	81	618	277	81
Jones.....	2,833,366	1	576	4,919	2
Keokuk.....	171,673	80	576	298	80
Kossuth.....	1,719,698	14	977	1,760	30
Lee.....	267,689	70	512	523	70
Linn.....	1,472,416	18	720	2,045	24
Louisa.....	72,727	90	407	179	89
Lucas.....	28,397	95	432	66	95
Lyon.....	240,998	73	587	411	75
Madison.....	115,857	87	576	201	88
Mahaska.....	569,625	49	576	989	51
Marion.....	128,390	84	576	2-3	87
Marshall.....	647,020	46	576	1,123	44
Mills.....	72,447	93	444	163	91
Mitchell.....	1,586,935	15	473	3,355	10
Monona.....	57,353	94	556	103	92
Monroe.....	17,136	96	432	40	96
Montgomery.....	216,959	74	432	502	72
Muscatine.....	245,209	72	437	561	69
O'Brien.....	527,231	54	576	915	52
Osceola.....	203,648	77	400	509	71
Page.....	214,538	75	557	385	76
Palo Alto.....	2,358,764	9	576	4,095	7
Plymouth.....	741,642	39	860	862	55
Pocahontas.....	742,461	38	576	1,289	41
Polk.....	206,754	76	585	353	77
Pottawattamie.....	582,466	48	980	607	66
Poweshiek.....	389,199	63	382	1,019	47
Ringgold.....	124,349	85	542	229	85
Sac.....	1,191,378	20	576	2,068	23
Scott.....	118,616	86	455	261	82
Shelby.....	381,498	65	590	647	65
Sioux.....	775,937	37	769	1,009	50
Story.....	1,725,037	13	516	2,995	13
Tama.....	726,767	41	720	1,010	49
Taylor.....	178,932	79	548	327	79
Union.....	1,040,241	25	432	2,408	18
Van Buren.....	44,736	94	484	92	93
Wapello.....	559,818	50	432	1,296	40
Warren.....	48,544	93	569	85	94
Washington.....	483,332	60	566	854	56
Wayne.....	316,376	67	523	605	67
Webster.....	526,997	55	720	732	60
Winnebago.....	1,094,155	23	403	2,715	14
Winneshiek.....	1,500,810	17	694	2,163	20
Woodbury.....	935,020	29	573	1,632	34
Worth.....	668,516	34	402	2,160	21
Wright.....	943,457	28	576	1,638	33
The State.....	77,581,337	.....	56,025	*1,384	.....

*Nearly.

TABLE No. 10.

Showing seventeen leading counties, according to rank in net shipments of butter per square mile; also total number of net pounds shipped and net pounds shipped per square mile; also showing rank of same counties and shipments per square mile for preceding year.

1898.			COUNTIES.	1897.	
Rank.	Total net pounds shipped.	Net pounds per square mile.		Rank.	Net pounds per square mile.
1	2,747,519	6.381	Bremer.	1	6,386
2	2,833,366	4,919	..... Jones	6	4,624
3	2,363,263	4,689	..... Chickasaw	2	5,790
4	2,634,882	4,572	..... Butler	4	4,954
5	2,546,712	4,421	..... Delaware	5	4,791
6	2,485,963	4,316	..... Buchanan	3	5,458
7	2,358,764	4,095	..... Palo Alto	16	2,770
8	2,227,874	3,707	..... Dubuque	8	3,967
9	2,561,978	3,519	..... Clayton	7	3,994
10	1,586,935	3,355	..... Mitchell	10	3,730
11	2,413,109	3,352	..... Fayette	9	3,943
12	1,829,518	3,176	..... Black Hawk	11	3,626
13	1,756,368	3,049	..... Hamilton	14	3,025
14	1,725,037	2,995	..... Story	12	3,532
15	1,094,155	2,715	..... Winnebago	21	2,501
16	1,552,370	2,695	..... Hardin	19	2,556
17	1,160,496	2,438	..... Howard	13	3,104

TABLE No. 11—CONTINUED.

COUNTIES.	No. creameries reporting.	New York city, 64.53 per cent.	Chicago, 13.59 per cent.	Boston, 7.59 per cent.	Philadelphia, 2.82 per cent.	New Orleans, 2.49 per cent.	Elgin, 2.14 per cent.	Pacific coast, 1.17 per cent.	Cleveland, 1.01 per cent.	Brooklyn, .7 per cent.
Fayette	14	1,405,774	535,710	45,961		128,000			5,703	
Floyd	4	513,392			34,851					
Franklin	8	387,628	142,000	5,340	3,160					
Greene	5	361,589	29,000							
Grundy	12	475,630	37,720	136,025		100,000				
Guthrie	2	99,895	16,126	1,206	1,204					
Hamilton	4	291,456	6,538	9,827						
Hancock	6	316,774	13,072							
Hardin	8	723,804	46,216							
Harrison	2	44,945	107,001							
Henry	2	24,000	18,522							
Howard	4	640,855	20,000	48,879						
Humboldt	8	1,333,609	171,448	16,671						
Ida	2	298,840								
Jackson	10	55,894	290,367		96,000		187,200			
Jasper	3	143,000	7,030		75,600					
Jefferson	3	51,801	21,167		50,000					
Jones	11	763,728	125,194	961,740	6,640	23,855		11,976		
Keokuk	1	127,580								
Kossuth	13	1,071,261	367,030							
Linn	11	402,505	16,054	150,759	1,645					
Louisa	2	43,450								
Lucas	1		23,063							
Lyon	1	22,607	5,651							
Madison	1		5,000		15,000					
Marshall	3	107,989	2,700	346,369						
Mills	2	12,000	8,476	2,000						
Mitchell	9	1,353,118	873					523,906		
Monona	1		4,400							
Montgomery	1		65,400							

Muscatine	3	44,600	222,320			157,220				
O'Brien	3	107,462	3,000							
Osceola	1	21,000								
Page	3	64,585								
Palo Alto	14	1,385,777	83,693	24,846			124,313			
Plymouth	7	383,663	205,319							
Pocahontas	3	307,665	8,208	37,050					11,000	
Polk	1		48,845							
Pottawattamie	2	50,000	327,367		25,000			21,000		
Poweshiek	1						6,000			
Ringgold	1	59,313								
Sac	9	435,505	75,474	10,688	115,000		320			
Scott	1		32,350							
Shelby	2	145,531	14,700	56,630						
Sioux	5	224,640	10,700				74,250		11,000	
Story	7	548,634	75,716	14,469						
Tama	2	71,608								
Taylor	3	188,346								
Union	6	30,000	467,800							
Van Buren	1	23,400								
Warren	1		16,315							
Washington	3	162,000	39,540	66,946						
Wayne	1				22,000					
Webster	4	181,193	24,121	48,599				1,300		
Winneshiek	6	511,696	4,930	1,910						
Winnebago	12	473,044	89,450	110,500	358,676	120,000				
Winneshiek	1	6,000	3,000							
Woodbury	5	384,305	2,800		101,279					
Worth	4	255,831	11,746	2,024						
Wright										
The state	448	30,903,920	6,510,971	3,631,913	1,351,304	1,192,718	1,023,256	562,072	481,291	234,517

In addition to the shipments given in the above table, there were reported shipments as follows: New Haven, 803,730; Washington, D. C., 172,227; Pennsylvania, 355,077; New York, 341,804; Illinois, 249,346; Rhode Island, 203,330; New Jersey, 154,816; Missouri, 67,152; Kentucky, 43,786; Montana, 38,616; Kansas, 16,862; Colorado, 14,774; Michigan, 13,407; Massachusetts, 8,067; Wyoming, 3,573; Arizona, 3,243; Alabama, 1,704. Foreign shipments, England, 66,162; Mauritius, 5,710; Burma, 1,080.

Total of all shipments of which the destination is reported is 47,890,131 pounds.

TABLE No. 12.
Statistical report of pounds of milk received, pounds of butter made, and how it was disposed of.

COUNTIES.	NUMBER OF CREAMERIES RECEIVING AND TOTAL POUNDS OF MILK RECEIVED FROM MAY 1, 1897, TO MAY 1, 1898.			NUMBER OF CREAMERIES MANUFACTURING BUTTER. TOTAL POUNDS OF ALL BUTTER MANUFACTURED FROM MAY 1, 1897, TO MAY 1, 1898, GIVING POUNDS OF SEPARATOR, GATHERED CREAM AND COMBINED SEPARATOR AND GATHERED CREAM.						TOTAL POUNDS OF BUTTER FURNISHED PATRONS, MARKETING IN IOWA, AND SHIPPED TO POINTS OUTSIDE OF THE STATE.			
	No. receiving milk.	Number reported.	Number of pounds of milk received.	Number of creameries.	Number reported.	Total No. of pounds of separator.	No. of pounds of separator.	Total lbs. com. separator and gathered cream.	Total lbs. manufactured.	Number reported.	No. of pounds of butter furnished patrons.	No. of pounds marketed in Iowa.	Shipped to points outside of state.
The state.....	716	537	1,307,271,078	793	585	53,491,562	6,809,141	4,299,411	64,600,114	360	2,319,674	1,755,596	60,524,544
Adair.....	5	3	13,194,921	5	3	587,442	.....	.....	587,442	2	7,463	4,107	575,872
Adams.....	2	2	12,784,912	2	2	571,848	.....	.....	571,848	1	.....	.....	571,848
Allamakee.....	5	4	18,319,528	9	8	816,161	631,665	.....	1,447,826	5	36,174	14,725	1,396,927
Appanoose.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Audubon.....	9	6	14,660,354	9	6	652,313	.....	.....	652,313	3	31,283	.....	621,030
Benton.....	10	8	13,677,738	11	9	562,374	46,017	.....	608,391	4	6,653	33,349	568,389
Black Hawk.....	16	13	44,819,358	18	13	1,937,663	.....	.....	1,937,663	12	107,516	151,968	1,678,179
Boone.....	5	4	8,988,598	6	4	356,329	.....	50,944	407,273	2	5,801	11,000	390,472
Bremer.....	27	22	69,189,753	26	22	2,941,869	.....	66,892	3,008,761	20	204,449	40,116	2,794,136
Buchanan.....	16	11	49,937,318	16	11	2,139,776	.....	.....	2,139,776	7	99,902	53,564	1,986,010
Buena Vista.....	8	7	19,374,569	8	7	851,035	.....	.....	850,035	3	14,634	9,803	825,593
Butler.....	22	17	44,927,922	22	17	1,284,313	.....	839,341	2,123,654	9	63,357	60	2,057,267
Calhoun.....	8	7	16,344,526	8	7	540,583	.....	.....	540,583	4	24,599	.....	515,984
Carroll.....	9	6	14,746,649	11	8	665,184	.....	.....	665,184	2	1,024	.....	664,160
Cass.....	1	1	11,400,800	1	1	514,000	.....	.....	514,000	1	.....	.....	514,000
Cedar.....	4	3	9,491,683	6	4	193,775	28,380	210,639	432,794	2	8,600	6,000	418,194
Cerro Gordo.....	11	5	6,273,824	11	5	249,501	.....	60,203	309,704	3	13,200	3,908	292,596
Cherokee.....	7	5	6,635,493	7	5	282,199	.....	.....	282,099	1	.....	.....	282,099
Chickasaw.....	18	17	52,505,915	19	17	2,229,183	.....	61,937	2,291,120	11	139,336	35,800	2,110,009
Clarke.....	2	2	5,462,400	2	2	247,453	.....	.....	247,453	1	.....	.....	247,453
Clay.....	9	4	8,081,251	9	4	357,090	.....	.....	357,090	2	14,805	1,187	341,098
Clayton.....	18	18	58,440,883	19	19	2,153,702	80,600	520,071	2,753,773	17	124,727	59,153	2,574,893
Clinton.....	8	8	8,948,000	9	8	339,500	.....	40,000	439,500	8	4,400	6,400	413,700
Crawford.....	5	3	6,009,367	5	3	262,891	.....	.....	262,801	3	3,700	.....	259,191
Dallas.....	5	5	9,159,179	5	5	441,325	.....	.....	441,325	2	5,000	5,000	385,325
Davis.....	2	1	1,500,000	3	2	67,811	50,000	.....	117,811	1	.....	6,780	111,031
Decatur.....	1	1	478,112	1	1	20,606	.....	.....	20,606	.....	.....	.....	20,606
Delaware.....	27	22	60,564,257	31	22	2,695,024	.....	.....	2,695,024	13	118,535	28,761	2,549,728
Des Moines.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

TABLE No. 12—CONTINUED.

COUNTIES.	NUMBER OF CREAMERIES RECEIVING AND TOTAL POUNDS OF MILK REC'D FROM MAY 1, 1897, TO MAY 1, 1898.			NUMBER OF CREAMERIES MANUFACTURING BUTTER TOTAL POUNDS OF ALL BUTTER MANUFACTURED FROM MAY 1, 1897, TO MAY 1, 1898, GIVING POUNDS OF SEPARATOR, GATHERED CREAM AND COMBINED SEPARATOR AND GATHERED CREAM						TOTAL POUNDS OF BUTTER FURNISHED PATRONS, MARKETING IN IOWA, AND SHIPPED TO POINTS OUTSIDE OF THE STATE.			
	No. receiving milk.	Number reported.	Number pounds of milk received.	Number creameries manufacturing.	Number reported.	Total No. pounds of separator.	Total No. pounds of gathered cream.	Total lbs. com. separator and gathered cream.	Total lbs. manufactured.	Number reported.	No. pounds furnished patrons.	No. pounds marketed in Iowa.	No. pounds shipped to points outside of state.
Dickinson	4	3	5,215,314	4	3	241,794	.....	.....	241,794	3	17,888	8,991	215,412
Dubuque	23	18	36,443,086	23	18	1,552,638	.....	.....	1,552,638	12	67,243	149,402	1,335,993
Emmet	5	4	9,888,523	6	4	425,879	.....	.....	425,879	3	12,617	.....	413,262
Fayette	22	17	57,454,743	22	17	2,356,410	.....	233,387	2,589,797	11	147,064	74,261	2,368,471
Floyd	6	4	6,371,964	7	5	233,392	309,851	67,575	615,818	1	5,267	.....	610,551
Franklin	9	9	17,301,033	10	10	451,467	105,000	253,840	810,307	7	18,232	.....	792,075
Fremont	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Greene	8	5	9,729,480	8	5	403,568	.....	.....	403,568	2	1,856	11,823	389,889
Grundy	15	12	32,162,048	16	12	1,338,478	.....	.....	1,338,478	9	71,307	11,483	1,255,688
Guthrie	5	3	14,457,040	5	3	650,161	.....	.....	650,161	1	5,308	29,318	618,533
Hamilton	10	7	16,294,730	10	7	713,600	.....	.....	713,600	3	20,691	142	692,767
Hancock	7	6	7,457,921	7	6	26,186	92,440	40,500	419,126	6	15,748	7,856	395,522
Hardin	11	7	18,563,933	12	8	760,996	92,948	68,871	922,815	3	12,669	14,882	893,264
Harrison	4	2	4,623,988	4	2	206,521	.....	.....	206,521	2	20,000	34,555	151,966
Henry	5	3	3,203,357	3	3	110,350	.....	.....	110,350	1	731	557	109,061
Howard	5	1	2,033,628	8	4	86,915	645,475	.....	732,410	2	6,419	17,007	708,984
Humboldt	8	8	17,255,894	8	8	535,133	.....	206,696	741,829	5	25,035	.....	716,764
Ida	5	2	6,983,230	5	2	805,948	.....	.....	805,948	2	8,898	.....	297,150
Iowa	2	.....	.....	6	1	.....	72,600	.....	72,600	1	.....	.....	72,600
Jackson	11	11	15,920,855	12	12	487,412	36,608	211,582	735,602	4	11,970	3,661	719,971
Jasper	8	6	12,158,300	8	6	529,418	.....	.....	529,418	2	6,000	7,500	515,918
Jefferson	8	3	5,142,591	8	3	234,812	.....	.....	234,812	2	6,827	31,752	196,233
Johnson	3	1	660,009	4	1	29,633	.....	.....	29,633	1	.....	3,000	26,638
Jones	18	16	63,433,322	18	16	2,745,311	.....	.....	2,745,311	10	61,241	97,734	2,586,333
Keokuk	2	2	3,581,470	3	3	154,867	178,000	.....	332,867	1	.....	31,895	300,972
Kossuth	21	17	48,405,893	21	17	2,136,079	.....	.....	2,136,079	13	117,779	16,347	2,001,953
Lee	1	1	625,000	1	1	25,000	.....	.....	25,000	1	.....	.....	25,000
Linn	26	17	25,452,390	25	17	1,051,212	.....	.....	1,051,212	7	40,956	17,891	992,365
Louis	.....	.....	.....	3	2	.....	57,850	.....	57,850	1	.....	16,400	43,450

Lucas	1	1	1,900,136	1	1	92,252	.....	.....	92,252	1	4,610	63,979	23,663
Lyon	4	2	2,661,211	4	2	114,842	.....	.....	114,842	1	2,669	4,236	108,037
Madison	3	1	440,000	3	1	20,000	.....	.....	20,000	1	.....	.....	20,000
Mahaska	.....	.....	.....	1	1	.....	300,000	.....	300,000	1	.....	15,000	285,000
Marion	1	.....	.....	3	1	.....	91,121	.....	91,121	1	.....	.....	91,121
Marshall	4	2	2,604,591	6	4	111,089	488,142	.....	599,231	1	4,640	.....	594,591
Mills	1	1	384,870	3	2	16,476	14,000	.....	30,476	1	166	8,000	22,310
Mitchell	3	2	5,275,128	9	8	.....	1,475,147	427,177	1,902,324	6	58,767	26,277	1,847,340
Monona	1	1	1,037,016	1	1	43,937	.....	.....	43,937	1	4,487	35,150	4,300
Monroe	1	1	850,163	1	1	38,000	.....	.....	38,000	1	.....	.....	38,000
Montgomery	1	1	1,451,880	1	1	65,400	.....	.....	65,400	1	.....	.....	65,400
Muscatine	3	3	5,759,678	3	3	.....	456,815	456,815	456,815	3	325	30,000	426,490
O'Brien	6	3	3,502,270	6	3	152,584	.....	.....	152,584	1	6,122	.....	146,462
Osceola	1	1	480,980	1	1	21,078	.....	.....	21,078	1	.....	.....	21,078
Page	6	4	2,941,589	6	4	130,118	.....	.....	130,118	1	1,175	.....	128,943
Palo Alto	17	16	44,461,398	17	16	2,053,037	.....	.....	2,053,037	13	167,214	37,414	1,848,469
Plymouth	11	9	17,233,877	11	9	633,060	.....	75,063	708,123	5	29,704	23,821	654,598
Pocahontas	8	6	12,202,962	8	6	553,013	.....	.....	553,013	1	6,000	.....	547,013
Polk	5	4	6,532,419	5	4	296,259	.....	.....	296,259	2	17,000	190,414	88,845
Pottawattamie	4	3	3,783,728	5	4	168,790	400,000	.....	568,790	2	6,202	59,434	567,154
Poweshiek	3	1	132,000	5	1	6,000	.....	.....	6,000	1	.....	.....	6,000
Ringgold	1	1	1,474,799	2	1	63,607	.....	.....	63,607	1	4,204	.....	59,403
Sac	13	10	20,218,415	13	10	884,373	.....	.....	884,373	6	35,235	23,508	825,610
Scott	2	2	1,281,717	3	3	53,820	32,150	.....	86,170	2	1,490	35,800	48,880
Shelby	7	4	10,696,198	7	4	463,540	.....	.....	463,540	2	6,600	.....	456,940
Sioux	8	5	6,773,760	8	5	267,482	.....	.....	267,482	3	5,287	27,555	234,640
Story	13	12	26,570,131	13	12	1,169,612	.....	.....	1,169,612	6	60,202	14,925	1,091,485
Tama	6	5	6,017,465	8	7	228,767	111,869	71,608	412,244	3	3,716	.....	408,558
Taylor	5	4	6,070,400	5	4	263,970	.....	.....	263,970	2	8,896	.....	236,074
Union	5	5	25,268,412	5	5	1,125,121	.....	.....	1,125,121	3	32,500	.....	1,092,621
Van Buren	2	1	516,000	3	1	23,400	.....	.....	23,400	1	1,100	.....	22,300
Wapello	4	2	2,711,862	2	2	113,687	.....	.....	113,687	1	500	.....	113,187
Warren	2	1	847,769	2	1	32,080	.....	.....	32,080	1	962	14,803	16,315
Washington	4	1	1,575,438	4	3	71,209	219,832	.....	291,041	2	1,500	22,543	266,718
Wayne	4	3	6,882,494	4	3	214,841	.....	.....	302,684	1	.....	.....	302,684
Webster	7	3	3,435,196	9	5	145,493	123,000	.....	268,493	1	3,578	.....	264,915
Winnebago	8	7	18,256,572	8	7	777,918	.....	.....	777,918	5	67,198	9,186	701,534
Winneshiek	6	5	4,729,410	17	14	72,000	1,124,826	167,189	1,364,615	9	14,990	4,212	1,345,413
Woodbury	8	4	1,923,034	9	4	81,394	.....	.....	81,394	1	3,000	12,233	66,161
Worth	7	6	14,712,628	8	6	53,293	.....	.....	63,633	5	57,364	660	615,907
Wright	9	4	6,618,733	10	4	247,482	.....	.....	247,482	3	8,973	10,000	299,009
Total	716	537	1,307,271,078	793	585	53,491,562	6,849,141	4,299,411	61,600,114	360	2,319,674	1,755,806	60,524,544

LAW IN REGARD TO MILK-TESTING MACHINES.

The one thing that retards the growth of the creamery industry is the suspicion of the test. Nearly all the complaints that come to this department from the producers of milk are in some way related to the matter of the testing of the milk. The inspection of the testing apparatus of every creamery of the state would be a valuable work, but is impossible on account of the magnitude of the undertaking and the lack of appropriation and authority for appointing assistants to the dairy commissioner. The law as it now stands provides for accurate testers, but leaves to the operator the matter of making sure that the apparatus is correct, and throws upon him the burden of proof that he uses correct tests. A very large amount of correspondence has been found necessary in supplying bottles and pipettes as required by law, and a large number of creameries have not yet complied with the law. A brief explanation of the statute in regard to the testing of milk and the dairy commissioner's supplies for milk testers will not be out of place.

The law makes it obligatory on the part of all persons, firms, or corporations receiving or buying milk, according to its content of butter fat, to be provided with one standard D. C. test bottle and one standard D. C. pipette, for each creamery or cheese factory operating a milk-tester, to the end that all test bottles and pipettes used shall be verified and correspond in calibration with the standard D. C. test bottle and standard D. C. pipette. The law indirectly requires manufacturers of milk testers to submit them to examination by the director of the experiment station at Ames, who will, if the machine proves to be a suitable and reliable one, certify the fact to the dairy commissioner. This tends to secure the use of proper and accurate test-machines and to exclude those that are found by the examiner to be unreliable or faulty. This is a positive advantage to the creamery manager, for he can make sure that he is using a machine that has been tested scientifically and not been found wanting. The certificate also specifies the number of revolutions the machine must make to do good work.

The different makes of testers having been certified to the dairy commissioner, he is required to supply one standard bottle and one standard pipette to every creamery making proper application for them and using a proper and certified tester. This may work some small hardship to the creamery manager who finds that his old machine does not meet the requirements, but the small expense of a new tester will be more than balanced by the increased confidence in the manager on the part of the patron. Creamery operators are accused of a great deal more dishonesty than they should be, and it will lessen the patron's suspicion very much to know that the machine that makes his milk test large or small is of an approved pattern.

The standard bottles and pipettes supplied by the dairy commissioner are numbered and marked with the letters "D. C.," and are accompanied by a certificate that the bottle or pipette is correctly calibrated, that it is suitable for use in the tester named in the application, and that the machine has been certified as one that is reliable when properly operated. He also sends with each certificate a card of instructions for a simple method of comparing the glassware used in the tester with the standard. The need of such verification does not seem to be fully understood. The bottles sold by the dealers show a very large per cent of incorrectly calibrated bottles. Even the supplies bought by this department under a guarantee of accuracy show a small percentage of inaccurate ones. All D. C. supplies are thoroughly tested under the direction of the dairy commissioner. If the directions accompanying each bottle and pipette were fully carried out and the law were fully complied with by all the creameries, unconscious inaccuracy in milk testing would be reduced to a minimum.

This law affords a patron a means of knowing whether the machinery of the test is accurate or not. It requires that the D. C. supplies and the certificates accompanying be kept for the inspection of the patrons at all times. The same provision affords the creamery manager a means of showing to the suspicious patron the fact that the test machine is a proper and reliable one and is properly and carefully operated. The law says that "in any action arising between any such operator and patron, the burden of establishing the use of reliable tests, and the results therefrom equivalent to the standard herein provided, shall be upon the operator." (Sec. 2523.) If the operator has complied with the law the matter is very simple, but if not he places himself in a very difficult position.

CERTIFIED MILK TESTERS.

Below will be found a list of the milk testing machines which have been examined at the experiment station at Ames and certified to this office as required by law. The dairy commissioner, in accordance with the statute, has on hand the bottles and pipettes suitable for use in the machines listed below:

STEAM MACHINES.

Cornish, Curtis & Green. *Curtis Babcock*, 20 bottles, 24 bottles and 30 bottles.

F. B. Fargo & Co. *Fargo's New 40 Bottle*.

Elgin Manufacturing Co. *Standard*, Nos. 1, 2, 3, and 4; *Russian*, No. 1. 12 bottles; No. 2, 24 bottles.

Creamery Package Manufacturing Co. *Ideal Turbine*, 20 bottles, 24 bottles, 32 bottles and 40 bottles; *Cushman Turbine Tester*, 24 to 40 bottles.

Haney-Campbell Co. *Superior*, 24 bottles; *Haney Tin Tester*, 20 bottles; *Haney's Turbine Tin*, 12 bottles, 16 bottles, 24 bottles and 30 bottles.

A. H. Barber & Co. *Doctor Babcock's Milk Tester*, 20 bottles, 24 bottles, 30 bottles, 36 bottles and 40 bottles.

D. H. Burrell. *Facile*, iron frame, 24 bottles.

Vermont Farm Machine Co. *Doctor Babcocks*, 20 bottles.

HAND MACHINES.

Creamery Package Manufacturing Co. *Roe Pattern*, 8 bottles and 24 bottles; *Curtis Babcock*, 15 bottles.

Elgin Manufacturing Co. *No Tin Babcock*, 6 bottles.

FINANCIAL EXHIBIT.

EXPENDITURES.

Commissioner's salary.....	\$1,419.35
Commissioner's contingent expense.....	249 05
Clerk's salary.....	900.00
Milk agents' fees.....	1,437.00
Milk agents' expense.....	86.42
Stationery and printing.....	152.75
General office expense.....	53.04
Telegraph and telephone.....	20.93
Express and freight.....	46.10
Analyses.....	23.00
Milk agent's special work.....	13.50
Extra office help.....	239.50
Total.....	\$4,640.64

RECEIPTS.

For 574 milk permits.....	\$ 574.00
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OLEOMARGARINE.

During the year two licenses have been issued for the sale of oleomargarine in this state, one in Dubuque and one in Council Bluffs. The collectors of internal revenue for this state report that oleomargarine is still shipped into the state direct to the consumer, but will not specify the amount nor the specific destination to which shipments are made. The dairy commissioner, at a date later than the filing of this report with the governor, caused complaint to be entered against the dealer in Council Bluffs, charging him with selling oleomargarine of a yellow color. The defendant agreed to stop the sale of the imitation butter, and, on the advice of the county attorney, the case was dropped. The dealer in Dubuque is now the only one in Iowa authorized to sell oleomargarine, and so far as known to this office he is complying strictly with the laws of the state.

There came to this office one anonymous complaint of the use of what the complainant thought to be oleomargarine in a hotel, without the proper display of the signs ordered by the law. The information was so meager that no case could be made out, and nothing was done. The coöperation of all creamerymen and dairymen is requested in the enforcement of the dairy laws of this state in regard to the sale of imitation dairy products. It is believed that the law now on the statute books is as good a law as is found in any state, and as stringent as can be passed; also that it is well enforced. The fact that but one complaint of its violation has come to hand indicates that the amount of oleomargarine that is fraudulently used is small.

CHEESE MAKING IN IOWA.

Very little of an encouraging nature can be found in the reports of the cheese factories in this state. Eight cheese factories have been changed to creameries or skim stations, seven have closed, and six new factories are reported, making a net loss of nine plants. The total product of the state will amount only to about one and one-half pounds per capita. It is hoped that future years will show a great increase in the amount manufactured. The state ought to produce all its own food supplies, and especially its dairy foods. Nevertheless it is apparent that the cheese-making industry is far behind the butter-making industry. It is also apparent from a comparison of reports of previous years and the present year that there is a tendency to make creameries out of cheese factories as soon as the amount of milk received will allow it. Probably the solution of the matter will be found in those factories that make butter and cheese both at different times of the year. There are at present nine such factories in operation.

It will be seen from the table that about one-sixth of the cheese made was shipped out of the state. The amount invested in cheese factory property is nearly \$100,000, and the total value of cheese made is close to \$350,000 for the state.

TABLE No. 13.

Iowa Cheese Factories—Showing value of plants, pounds of milk received, number of pounds of cheese manufactured and disposition of same for the year ending May 1, 1898.

COUNTY.	TOTAL NUMBER AND VALUE OF ALL PLANTS.			TOTAL POUNDS OF MILK RECEIVED, AND TOTAL POUNDS OF ALL CHEESE MANUFACTURED DURING THE YEAR ENDING MAY 1, 1898.			TOTAL POUNDS OF CHEESE SOLD OR CONSUMED IN IOWA AND POUNDS SHIPPED OUT OF THE STATE.			TOTAL TONS COAL USED DURING YEAR.	
	Number factories.	Number re- porting.	Value.	Number re- porting.	Total pounds of milk re- ceived.	Total pounds of all cheese manufac- tured.	Number re- porting.	Pounds sold in Iowa.	Pounds shipped out of state.	Number re- porting.	Number tons.
Appanoose.....	4	4	\$ 1,800	4	2,083,868	200,230	4	153,430	46,800	3	34
Benton.....	3	3	10,500	1	1,379,944	137,000	1	137,000	.....	1	30
Black Hawk.....	3	3	6,500	2	2,335,000	233,000	2	98,950	34,120	2	40
Cerro Gordo.....	2	2	3,000	2	1,334,000	134,070	1	194,679	21,631	1	60
Floyd.....	2	2	3,000	2	3,105,740	310,310	2	79,500	2,000	.....	.....
Hardin.....	2	2	2,100	2	890,000	81,500	1	11,504	10,000	.....	.....
Humboldt.....	2	2	300	2	647,041	64,504	2	88,700	.....	1	15
Kossuth.....	4	4	2,000	2	916,980	88,700	2	30,100	29,700	1	9
Monroe.....	2	2	1,400	2	598,877	59,800	6	114,861	.....	1	6
Muscatine.....	9	9	4,450	9	1,719,342	104,153	3	292,211	.....	1	93
Poweshiek.....	3	3	8,000	3	3,237,870	292,211	2	140,795	.....	.....	.....
Washington.....	3	1	1,200	2	1,422,953	140,795	.....	.....	.....	.....	.....
Bremer, Clarke, Dallas, Decatur, Delaware, Greene, Grundy, Guthrie, Hancock, Howard, Jefferson, Johnson, Jones, Lee, Linn, Marshall, Montgomery, Muscatine, Page, Ringgold, Sac, Story, Tama, Taylor, Warren, Wayne.....	29	20	32,300	21	11,053,079	1,090,127	16	540,465	151,939	7	161
The state.....	67	53	\$ 78,550	54	30,744,694	3,002,400	42	1,843,185	296,190	18	448

The average for 54 factories is 55,600 pounds of cheese.

The total for 67 factories would be 3,725,200 pounds of cheese, worth \$350,000.

Nine factories also make butter.

TO THE MILK DEALERS OF THE STATE OF IOWA.

Your patrons want clean, sweet milk.

They want it rich in cream and solids.

They are much better pleased if it is delivered in clean, bright cans, and by a clean, gentlemanly man who drives a tasty, clean wagon.

They note with displeasure the sediment that sometimes settles in the bottom of the white pitchers, and are not deceived when you tell them that it comes from the wear of the cans. They know very well that it belongs in the barnyard.

They know the flavor of good milk that comes from healthy cows fed upon good food, and do not like the milk from cows fed upon slops or fermented feed of any kind.

They will not buy milk, if they know it, with any substance put in it as a preservative.

They will consume double the quantity of good milk that they will if it is poor.

They are willing to pay for a good article, but all men dislike to pay for a poor one.

Milk will absorb and carry disease germs from your cow or your family to those to whom you sell the milk. Therefore sell no milk from diseased cows or when your family are sick with any contagious disease.

Use pure water to wash all milk cans. Twenty cases of typhoid fever have been traced directly to a milkman who used stagnant water for this purpose.

Give the cows pure water. Allow no cows to stand in stagnant, muddy ponds of water.

If you must stable cows in sheds then see to it that the floor is sufficiently raised to admit of fluids draining away from the cow. Twenty-five or fifty dollars well spent would revolutionize some stables inspected.

It is a filthy and bad practice to allow manure heaps to accumulate against and around your barns to ferment and render bad the sanitary conditions of your stock and home, as well as the milk you deliver to your customers.

Always keep in mind the little children who are to drink the milk sold by you. They are as precious to the city as to the country parent.

Cream rises rapidly on milk; hence dipping constantly from the top of the can, without thoroughly stirring, usually leaves the last half of the milk below standard—3 per cent butter fat.

Change water in tank where milk is cooled every day.

Place tank away from the barn and thoroughly cool and aerate the milk as soon as drawn from the cow.

It pleases the clerk of this office to record tests of milk at or near 4 per centum, but to record tests of from $2\frac{1}{2}$ to 3 per centum is not pleasant work.

If you wish to be prosperous and happy do a little better than comply with the above suggestions.

If your heart and mind are right you will assist the milk inspector of your city to raise the standard of milk sold in your city.

The people who buy are entitled to good milk, and the laws of the state are only for the purpose of forcing unwilling men to give it to them.

As dairy commissioner, I am glad to say that most of the dealers are furnishing milk of a good quality and of a good standard.

Study the following tests for the cities of the state.

I have known many men engaged in producing milk who have become well to do by following the above suggestions, but can now think of none who followed the opposite plan and succeeded.

Good food will greatly influence the quantity of milk as well as its flavor, but to increase the richness you must get another and better cow.

Own and milk cows that give you good, rich milk. It costs you no more to feed and milk cows that give 4 per cent milk than it does cows that give 3 per cent milk.

Milk is the natural infant food of man and beast, and nature makes no mistakes; so give it to infants pure, sweet and clean.

[L. S. GATES.]

INSPECTION OF CITY MILK DEALERS.

The inspection of city milk dealers is carried on in the thirteen cities of the state which have more than 10,000 inhabitants. In the following tables the numbers show the test for each dealer for each month, about half the numbers indicating a single test and the others showing the average of two or more tests in the month. The numbers in the last column but one show the value of the tests below standard, and are not averages but single tests. The numbers in the last column are averages of cream tests for the year.

The legal standard for milk in this state is 3 per cent of butter fat, which is less than in some of the eastern states. This standard is low enough to protect the milk dealer, for first-class milk will show nearer 4 per cent than 3 per cent of butter fat. The legal standard for cream is 15 per cent of butter fat.

A careful inspection of the following tables will show the relative value of the milk sold by the different dealers in each city.

Read also the sections of the law which apply, sections 2524 to 2527 inclusive.

It is believed that the inspection of milk in the cities affected by the work of this office is in worthy and efficient hands. A list of the milk inspectors follows:

Burlington.....	W. B. McChesney
Cedar Rapids.....	Dr. J. W. Griffith
Clinton.....	Allen E. Rumble
Council Bluffs.....	Rupert Fleming
Davenport.....	H. J. High
Des Moines.....	Currie C. Chase
Dubuque.....	Dr. B. Michel
Ft. Madison.....	Camp Thomas
Keokuk.....	F. Harshman
Marshalltown.....	E. M. Singleton
Muscatine.....	A. K. Raff
Ottumwa.....	E. B. Hill
Sioux City.....	O. P. McCray

BURLINGTON.

Number of permits, 38.

NAME OF DEALER.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Below stand- ard.	Cream.
Binder Bros.	3.8	4.0	4.1	3.8	3.9	...	...	...	3.5	3.5	3.7	...	...	...
Binder, Theo.	4.0	4.1	...	3.8	...	...	...	...	3.5	3.5	3.9	...	...	...
Boecher, Henry	...	3.8	...	3.7	...	...	...	...	3.2	3.6	4.2	...	...	...
Bowman, H. C.	...	...	...	...	...	...	...	...	4.1	...	...	...	...	...
Buhrmaster, O. H.	4.3	...	4.0	4.0	...	4.2	...	...	4.0	...	...	...	18.6	...
Dalley, C.	...	...	5.6	...	...	...	...	...	4.9	...	...	...	...	...
Davis Milk Co.	...	...	...	...	3.8	4.0	4.6	...	...	...	...	...	...	...
Duckstein, F.	4.4	...	3.9	...	...	...	...	...	4.8	4.1	...	...	34.0	...
Ernst, F.	4.2	3.9	4.1	4.0	4.3	...	...	...	5.2	5.0	...	...	17.7	...
Garnat, O. G.	3.9	4.1	...	...	...	...	...	...	3.8	3.4	3.0	...	...	...
Hacker, A.	4.2	4.0	4.0	3.6	...	...	...	...	4.9	...	...	...	...	...
Haskell, C. L.	...	...	...	...	...	...	...	...	3.9	...	...	...	...	...
James, Joe.	3.6	3.7	...	...	...	...	...	...	3.0	3.4	...	...	...	...
Johnson, C. A.	...	...	...	...	...	...	...	...	4.0	...	...	...	...	...
Koestner, H. C.	3.6	...	3.7	...	3.8	...	...	...	4.0	4.3	...	...	15.0	...
Leak, George S.	4.9	3.0	4.0	...	...	...	...	...	3.6	...	4.3	...	...	...
Leak, H. D.	...	...	...	...	4.1	3.9	...	...	3.8	3.8	...	...	...	...
Parsons, F. M.	4.4	4.9	4.3	4.0	...	...	...	...	4.7	4.8	...	...	24.6	...
Richterberg, F.	...	...	...	...	...	...	...	...	3.5	...	...	...	...	...
Senti, A.	5.0	3.7	4.1	...	...	...	...	...	3.5	...	...	...	...	...
Schwanker, Charles	...	...	...	...	...	...	...	...	3.4	...	...	...	...	...
Schwanker, Henry.	6.0	4.2	4.8	...	...	...	...	...	3.4	...	4.0	...	19.0	...
Sourwine, B.	...	4.4	3.9	4.4	...	...	...	...	3.7	...	...	...	...	...
Swords, E. T.	...	...	...	...	4.4	3.9	...	...	3.6	4.0	4.2	...	18.3	...
Tennitz, E. J.	4.7	...	4.0	...	4.6	4.5	...	...	3.9	4.2	...	...	23.0	...
Upton, J. C.	...	...	4.0	4.0	5.2	...	...	...	3.4	3.0	3.0	...	19.8	...
Van Winkle, C. G.	...	...	...	...	...	...	...	...	4.9	...	...	...	...	...
Vaughan, S. T.	4.7	3.0	4.6	5.3	4.2	...	...	...	4.9	...	...	...	...	...
Vogelsang, H.	...	4.0	4.2	...	...	...	...	...	4.3	3.7	...	...	...	...
Wotton, J. T.	...	...	...	...	5.0	...	...	...	...	...	...	...	...	...
Wueliner, Fred.	4.0	...	...	4.5	...	4.7	...	...	4.2	...	4.5	4.6	...	...

LIST OF CITY MILK DEALERS, CEDAR RAPIDS.

Number of permits, 54.

NAME OF DEALER.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Below stand- ard.	Cream.
Alt, L. W.
Benner, F.
Brook, R. C.
Fanger, E. S.
Bear, W. T. S.
Berry & Bear
Clarke, James
Clarke, George A.
Dockert, A.
Groat, Paxton
Height, Frank
Klinger Bros.
Koutney, J.
Klimeyer, F.
Ling, A.
Listebarger, L. G.
Leusch, John
McDowell, W. K.
Miller Bros.
Matousek, F.
Pygnolis, W.
Planey, Frank
Patman, George
Porter, J. R.
Parks, G. W.
Richmond, E.
Richmond, T.
Robb Bros.
Reynolds, D. W.
Rawson, J. R.
Rooks, J. H.
Smith, A. H.
Smith, S. G.
Stank Bros.
Stusak, John
Schmidt, W. A.
Svec, Stephen W.
Thompson, Tom
Talbot, A.
Williams Bros.
Wohen, J.
Wendler, T.
Wilant, W. T. & D. U.
Wilson, E. A.

CLINTON.

Number of permits, 38.

NAME OF DEALER.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Below stand- ard.	Cream.
Anderson, W. C.
Anderson, W. C.-depot.	4.5	4.0	3.8	...	4.2	...	4.6	...	4.9	4.8	4.1	4.5	...	...
Anderson, A.
Bach, John.
Baer, J.
Boyd, J. O. L.

CLINTON—CONTINUED.

NAME OF DEALER.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Below stand- ard.	Cream.
Caplan, C. F.	4.0	3.9	4.4	4.9	4.4	5.1	4.9	...	4.6	5.0	3.9	5.6	...	...
Carpenter, P.	3.3	3.7	3.8	4.1	4.5	4.4	...	...	4.0	4.2	4.2	...	...	...
Clausen, H.	3.4	3.4	3.8	3.5	4.5	4.3	4.4	...	3.7	4.0	3.6	3.9	...	...
Everman, H.	3.8	3.5	3.6	3.6	3.7	4.0	4.8	...	3.7	4.0	3.6	3.9	...	...
Fanger, H.	4.1	4.4	4.0	4.8	4.7	4.7	4.8	...	4.2	4.2	3.8	3.9	...	...
Fitch, H.	4.4	3.7	...	4.0	4.4	4.5	4.8	...	3.8	4.0	3.4	4.2	...	...
Gertson, D.	4.1	3.8	4.1	...	4.3	5.1	5.0	...	4.8	4.5	4.5	...	...	...
Gideonson, John	4.4	3.7	...	4.0	4.4	4.5	4.8	...	4.1	4.0	...	...	...	...
Grumstrup, P.	4.1	3.8	4.1	...	4.3	4.1	4.7	...	4.2	...	...	...	...	...
Heath & Stockwell	3.9	4.0	3.4	...	4.3	4.1	4.7	...	4.2	...	...	...	...	...
Heath, Clinton	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Johnson, Nels.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Johnson, Gus.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Krogman, Frank.	3.8	3.2	4.0	4.3	4.6	4.0	4.6	...	4.0	3.8	3.3	...	...	...
Kennedy, John J.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Miller, M. C.	4.4	3.8	3.7	4.6	4.7	4.5	4.3	...	4.5	4.8	3.8	4.0	...	...
Morrisey, Owen.	3.8	3.2	3.8	4.1	4.6	4.3	4.3	...	4.0	4.1	3.6	3.6	...	...
Nissen, C.	4.1	4.0	3.5	4.1	4.1	4.1	4.1	...	4.1	3.8	3.7	3.4	...	...
Nielson, C.	4.7	3.7	4.3	...	4.6	4.3	...	...	4.3	5.0	3.5	4.5	...	...
Oleison, S.	3.2	...	4.0	4.2	4.8	4.4	4.5	...	3.6	...	...	...	...	...
Oleison, J. S.	3.9	4.0	4.5	4.8	...	4.5	...	...	3.2	3.8	3.8	3.6	...	34.6
Paulson, Carl.	3.6	3.6	4.0	4.6	4.3	5.0	5.2	...	4.9	4.0	3.3	4.7	...	...
Pearls, Nels.	3.7	4.0	3.8	4.7	4.8	...	...	...	3.8	4.4	...	...	...	...
Peterson, C. O.	3.8	3.8	3.8	4.0	...	...	...	...	4.4	4.1	4.1	...	...	...
Rasmussen, F.	3.6	...	3.8	4.4	4.8	4.6	4.5	...	4.5	4.0	4.0	...	...	...
Reter, J.	3.8	3.3	4.0	4.4	4.3	3.9	4.3	...	4.0	4.8	0.30	2.7	35.7	...
Rundlett, J. A.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Schmidt, F.	3.4	3.2	...	3.8	4.2	3.8	4.0	...	4.0	4.6	3.1	3.2	...	...
Seiser, Charles.	3.4	3.2	3.8	4.3	...	5.0	...	...	4.3	3.9	4.1	3.8	...	...
Simmons, S.	4.2	4.0	5.0	4.6	...	...	...	...	4.2	3.9	4.1	3.6	...	...
Thompson, C.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Westfall, L. G.	...	...	...	...	...	...	...	...	4.0	4.5	3.4	3.6	...	...

COUNCIL BLUFFS.

Number of permits, 28.

Arnold, P. J.	3.8	4.1	3.9	3.9	3.5	3.6	5.0	3.8	4.7	4.7	4.0	3.7	...	...
Applegate, O. N.	3.9	3.7	4.1	4.0	3.8	3.9	4.2	4.0	4.1	3.8	3.2	3.3	...	...
Abie & Webster	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Baker, W. W.	3.9	...	3.7	3.9	3.8	4.0	3.9	3.6	3.7	3.5	4.1	3.7	2.6	...
Boal Bros.	3.5	3.7	3.6	3.9	3.8	3.8	3.8	3.6	3.8	4.0	3.6	3.7	...	...
Casdale, E. J.	4.3	4.3	3.9	3.8	3.5	3.4	3.5	3.6	3.7	3.6	3.6	3.6	...	...
Ellsworth, A. C.	3.5	3.7	3.8	3.8	3.9	4.2	4.2	4.2	3.6	3.9	4.1	3.9	...	21.0
Greenweg, W. A.	5.0	4.0	5.0	5.1	4.6	4.4	4.4	3.6	3.6	3.9	5.0	4.8	...	...
Holmes, J. C.	4.0	4.0	4.2	4.4	4.4	4.4	4.4	3.7	4.0	4.0	4.2	4.4	2.5	...
Johnson Bros.	3.7	3.8	3.9	3.9	3.7	4.1	4.0	4.0	4.0	4.1	3.8	3.9	...	...
Jergenson, N. P.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stefanson, W.	...	...	...	...	...	...	...	...	...	...	...	...	2.5	...
Rissel, W. H.	5.2	4.8	5.3	4.1	4.0	4.1	5.1	5.5	4.4	5.0	5.0	5.2	...	...
Leonard, Henry	3.6	3.9	3.7	4.7	3.8	3.4	3.7	3.9	3.7	4.0	3.8	3.9	...	...
Marshall, H. H.	3.5	3.9	3.8	3.9	3.9	3.9	4.2	4.0	4.1	3.8	3.7	3.6	3.7	20.0
Marquette, Mrs. S.	4.3	4.0	4.1	3.6	3.6	3.4	3.1	3.2	3.5	...	3.5	3.5	2.9	...
Mason, J. C.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nelson, N. P.	3.6	3.8	4.1	3.8	4.4	4.2	4.9	4.6	...	...	...	...	...	...
Pratt, C. F.	4.0	3.9	3.5	...	...	...	...	...	...	...	...	...	...	...
Reid, A. H.	3.3	4.0	3.9	3.8	4.5	4.6	4.6	4.4	4.3	4.2	4.3	...	...	...
Relf, A. H.	3.3	4.0	3.9	4.0	3.3	4.2	4.0	4.5	3.8	3.9	3.8	3.8	...	...
Robinson, Mrs. M. M.	5.8	4.7	5.6	5.7	5.6	4.7	4.7	4.8	4.1	5.5	5.5	5.3	...	...
Robinson, Mrs. M. M.	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	...	...
Schmidt, J. C.	3.9	3.9	3.9	4.1	3.8	3.6	3.6	3.8	4.3	3.9	3.9	3.6	...	21.0
Scholdemo, Otto	...	...	...	...	...	...	...	...	...	...	...	...	...	...

DAVENPORT—CONTINUED.

NAME OF DEALER.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Below stand- ard.	Cream.
Berger, F. E.			3.8	3.3	3.6	3.8	3.6	3.8	3.8	3.0	3.3			
Blumer Bros.		3.8		4.0										
Bruhn, H.					4.2									
Bruhn, L.	3.6													
Barraclough, G.	4.0	3.6	4.8	4.2										
Buhman, William		3.7	3.1	4.3										
Bridewell, T. O.		4.6												
Christianson, O.														
Coglan, Thomas	4.0	4.2	3.6	4.2	5.4	4.8	5.6	3.5	6.4	3.1	3.5	3.8		
Cowiezell, John	3.2	3.2	3.6	3.6	3.2	4.4	3.2	3.9	4.0	4.1				
Cowiezell, Jacob	3.2	3.2	3.6	3.6	3.2	3.4	3.7	3.2	3.6	3.7	5.2			
Carstensen, August	4.2	3.6												
Dismer, W.		4.4	4.6	4.6	4.6					3.0	3.7	3.6		
Drier, F.		3.3			3.6	3.6								
Flambo, G.			3.3	3.3	4.1	4.4				3.5	3.3			
Gaukler, Joe.	3.4	4.0	3.7	3.2	4.6	3.6	3.8	3.5	3.8	3.8	4.7			
Goetsch, H. J.		3.8		3.8	4.0	4.0	3.8	4.2	3.8		4.0	3.6		
Haase, H.		3.1			4.4	3.8		4.3	3.8					
Herriman, H.	3.5		3.6	3.6	3.6	4.4		3.3	3.2	3.4	4.6	3.7		
Harrison, J. W.						4.8	4.7		3.6	3.9	3.4			
Harmes, Henry	3.6	3.4	3.3	3.6	4.6	3.6	4.3				3.4			
Heuer, Olaus	3.3	3.8		3.7	3.6	3.2		3.6	3.4	3.1	3.1	2.7		
Heuer, John	3.4			3.6	4.6	3.8		4.0	4.1		3.5	2.8	2.8	
Hinselman, H.	4.6				4.2	4.2								
Haller, Charles L.			3.9		4.2	3.7	3.6		4.6	4.6	3.8			
Jurgensen, J.	3.0		3.8	4.0	4.4	3.8	3.2	3.6	3.7	4.6				
Kelling, Fritz	3.6	3.6	3.4	3.4	3.5	3.5	6.2		5.0	3.0	4.6	2.8	2.8	
Kellogg, H.		3.4		3.6		4.4								
Koch, John		4.4			3.9	3.8		3.9	3.6	3.4	3.2	3.6		
Lange, J.	2.7	4.6		4.3	3.1	3.4		3.9				3.8	2.7	
Laible, J. F.	4.2	4.0	4.0	3.3	3.0	4.4			4.0	4.0	4.0		2.8	
Larsen, A.	4.0		3.2	3.5	4.3	4.2	4.0		4.0	4.0				
Maves, John	3.1	3.8	4.8	4.5	4.2	4.2	4.3		4.0	4.4	3.7	3.3		
Mess, Henry		3.2			4.0	4.1	4.4	3.2	3.6					
Mueller, A.		3.5		3.6	3.2	3.5	4.6	3.5	4.4	4.1		3.1		
McClosky, J. H.							3.0		3.4	3.6	3.5	3.4		
Newman, E. H.						4.0	4.0		5.0		3.7			
Nagel, H.		4.6	3.7	3.6	4.0		3.8	3.8	3.9			4.4		
Puls, John		4.0	3.6	3.2	5.2			3.2						
Peterson, P.	3.0	3.8	3.4				5.0	4.0	4.0	3.6	3.8	3.2		
Prigault, A.		3.7	4.8			5.2		4.9	4.7		3.6	3.3		
Peterson, Hans.	3.2						3.8	3.9		4.0		3.7	2.8	
Prinz & Moffatt		3.2	3.8		4.0	3.8	3.4	3.8			3.3			
Peters, O.	4.4	3.9			4.8	4.4		3.4			3.5			
Ramm, Max.	3.2	3.6		3.4	3.2	3.8	3.4	3.4			3.9	3.2		
Ramm, Fred	4.2				3.9				4.2		4.3	3.8		
Ruhman, O.	3.0		3.6	4.0	3.8	4.1		3.3	4.0	4.6		4.6		
Ren, Lenhard		3.4	4.0			3.6								
Sivertsen, C. F.	3.0	3.6	3.6	3.6	4.1	3.5	3.7	3.6	4.2		2.7	3.0	2.7	
Schladtitz, A.	3.0	3.3		4.6		4.6	5.0	4.1	4.8					
Schmidt, John	3.2	3.6	3.4						3.5			3.3		
Schnoor, O.		3.4	3.5	4.2	4.6	4.6	4.0	3.8	4.1		3.9	3.9		
Schrumer, Max.			3.8	3.4	4.1						4.1			
Springhorn, P.	3.4	3.5		3.6	5.2			4.8						
Schoening, Bros.	2.8	3.4	3.4	3.0	3.4	3.8	3.6	4.3		3.4	3.8	3.0	2.8	
Stuhr, Theo.	4.0	3.2	3.6	3.8			3.8			3.6		3.5		
Sachan, M.					4.8	4.4	3.8	3.6	3.8					
Thissen, Paul	4.4	4.6	3.6		3.6	4.4	3.7	3.8		4.1	3.3	3.9		
Van Tugl, J.						4.2								
Woehlk, John	3.7		3.1		4.4			4.6				3.2		
Willers, H.		3.0	3.8	3.6	3.4	3.5	3.5	3.5	3.5	3.6	3.5	3.4		
Welse, R.	3.4				4.4	4.2				3.8		3.2		
Zarn & Flambo	3.0		3.5	3.5		3.7				4.0		4.4		
Zinger, George.	3.0	3.2	3.4	4.4			3.6					3.3		

DES MOINES.

Number of permits, 140.

Adamson, Jane	4.1	3.7	4.5	4.2	3.5	3.7	4.5			3.2		3.6		
Anderson, August	3.2	4.1	4.0	4.7	5.3	4.4	4.4	3.9	4.2	4.2		3.8		
Arthur, R. O.														

DES MOINES—CONTINUED.

NAME OF DEALER.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Below stand- ard.	Cream.
Bailey, J. W.	2.2	3.7	3.6		4.6			3.9						
Ball & Bartz					5.0	4.5		4.0						
Bennet, Robert	4.1	3.8	3.7	3.9	4.1	4.2	3.9	3.9	3.7	3.7	3.9			
Bennett, W. P.		2.9	5.0	3.3	4.2	4.4	4.6	4.8				2.9	21.7	
Berger, H.														
Blackman, F. M.			3.5	4.1	4.2	3.8	3.9	3.9	4.0	3.6		2.5		18.0
Borgenson, Andy	4.0	3.3	3.0	2.7	3.2	3.7		3.4				3.0	2.7	
Bragdon Bros.	3.9	4.1	3.6	3.5	3.8	4.0	3.9	4.2	3.5	3.7		3.7		17.1
Buckley, H. T.		3.7			3.8									
Burke, U. J.	3.9	3.5	3.2	3.5	3.8	3.5	3.5	2.9	3.7	3.1		3.9	2.9	
Campbell, Ed.	3.3	3.5	3.3		3.7	2.9	4.0	3.2	3.1	2.9		3.1	2.9	18.0
Case, H.														
Chapman, Miss A. A.	3.6		4.1	4.1	3.7			3.3	4.3					
Churchman, M. W.	3.4	3.3	3.2	3.3	4.0	4.4	3.9	4.3	3.8	3.7		3.9		
Clafin, W. P.												2.9	2.9	
Clark, H. S.	3.6	3.6			3.7			4.0	3.9			3.3		
Cruikshank, J.	3.9	3.6	3.7	3.9			3.9	4.1	3.7	4.5	3.9	3.5		18.5
Davis, O. P.														
Dawson, J. J.		3.9	3.7	4.3	4.3	4.4		3.7	3.7	3.9	2.1	3.7	2.1	
Dippel, Louis	3.8	3.8		4.3	4.3	3.5	3.7	3.8	3.6	3.5	3.7	3.0	2.7	19.2
Ehle & Ehle	2.7	3.7	3.7	3.6	3.5	3.5	3.8	3.8				4.2	3.8	
Ekdahl & Johnson					3.3									
Fair Lawn Dairy	3.7	3.6	4.1	3.3	4.2	3.9	4.1	3.8	3.5	3.7	4.5	4.0		28.5
Felt, G. W.		3.5	4.0	3.5	3.7	3.8						4.6	2.8	24.0
Fitzgerald, Kate	4.1	3.3	3.6	4.5	4.8	4.1								
Flynn, Thomas	3.7	3.5	3.5	4.0	3.9	3.8	3.6		3.5	3.6		3.7		22.5
Gardner, S. H.								4.0	3.2	4.1	4.6	2.5	15.9	
Garton, S. B.	3.4		3.2	2.8	3.6	3.3	3.5	3.2	4.3			2.4	2.5	2.4
Gay, C. J.		3.7	4.1	3.9			3.7	3.7	3.3	3.4	3.5	4.2	2.8	
Gell, F. M.	4.1	3.9	3.9	4.1			4.5	4.5	4.6	4.5	3.7	4.0		20.1
Good, W. E.	3.7	4.0	3.0	4.1	3.6	3.7	3.8							
Gordon, J. R.	3.5	3.6		3.1	3.7	4.1	4.4			3.7	3.7			
Gordon, Wm.	4.2				4.1			3.6	3.7			4.2		
Graham, Mrs. M. J.		3.7	3.9	3.7	3.8	3.8		4.7	4.1					
Hall, H. D.					4.0	3.6	3.8	3.7	3.6	3.3		3.6		
Harding Ice Cream Co.	2.1	3.7	3.8	3.6	4.3	3.1		4.0	3.6	3.5		2.1		
Harles, F. C.	3.7	4.5	3.9	3.7	4.3	3.9	4.0	3.9		4.5		3.3	2.6	
Harvey, Wm.	3.8													
Hawkeye Milk Co.	3.7	3.7	3.8	3.8	3.8	3.9	3.7	3.7	3.8	3.5				
Hawks Bros.	3.6	3.1	3.6	3.3	3.9	4.0		4.1	4.1	3.8		3.5		
Hockersmith, J. S.	4.3	3.7	3.2	3.5	4.1	3.3	3.5	3.3	3.7	3.6		3.3		
Hollingsworth, Mrs. E.	3.4	5.0	4.3				4.0	4.3						
Homan, O. M.	2.6	3.2	3.2	3.1	3.7	3.8	3.8	3.4	3.7	3.2	3.9	4.0	2.6	
Howell, W. C.	3.4	4.3	4.0	4.2								1.5		
Iowa Dairy	2.8	3.6	3.6	3.6	4.0	3.8	3.8	3.6	3.7	3.4	3.4	3.7	2.4	18.7
Johnson, C. R.	3.7	3.9	3.4						3.7	3.6		3.2		
Kampinsky, J.	3.6													
Knapp, Miles	3.5	3.3												
Lane, A. C.	3.3		4.1	3.9	4.0	3.9		4.6	4.5	3.8		3.7		
Lee, A. A.	3.5		3.6	3.3	3.0		3.5	3.1	3.5	2.9		3.3	2.5	
McCaughtry, H. J.							3.8	2.6	3.3	3.8	2.7	2.6		
McConnell Dairy	4.3	4.4	4.2	4.0	4.5	5.1	4.8	4.2	4.2	4.5				
McDill, C. W.														
McKowan, G. W.	4.3	3.4	3.5	3.8	3.9	3.9	3.5	3.0						
Moone, E. E.	3.9	4.0	4.0	3.8	3.8		4.1	4.0	3.9	3.5		3.9		19.3
Miloslawsky, J.					3.6	3.6								
Mueller, John	3.7	4.1	4.1	3.7	4.2	3.6		3.6	3.7	3.0				17.5
Myer Bros						3.7	3.7	3.5	3.1					
Olson, John	3.6	3.4	4.0	3.5	4.0	4.4	3.9	4.1	3.9	3.5	3.7	3.9		27.0
Patton, F. G.								3.7	3.5	3.6		3.6		26.1
Perkins, Wm.	3.8		3.9	4.4					3.0	3.9		3.2		
Peterson, P. J.					4.5							3.7		
Pickering, O. B.		4.1			4.5	4.3	3.7	3.5	3.9	4.2		4.0		24.0
Proctor, George								4.2	3.8	3.9		3.5		19.8
Pugh, Mrs. H. A.	4.5	2.8	3.3	3.4					3.5	3.5				15.3
Quist, A.	3.8	4.0	4.0	3.1	4.0	3.7	3.7	3.6	3.2	3.4		3.1		
Quist, Frank	3.2	4.5	3.8	4.1	3.5	3.3	4.1	4.0	3.7	4.0		4.1		
Reddish, D. M.						4.2	3.3	4.5	4.3	3.0	3.7	3.7		
Rickerts, W. E.	3.4	3.8	3.4	3.4	4.0	4.2	4.4	3.6	3.9	3.4		3.8		17.4
Rieg, F. M.	3.7	3.4	3.6	4.0	4.5	4.6	4.2	4.2	4.0			4.0		24.0
Robesky, T. A.					3.2	4.4		3.7						
Rogers, R.		3.8								3.9				
Sander, H.	3.3	3.3	3.8	4.1		4.0		4.5	3.3	3.3		4.0		

DES MOINES—CONTINUED.

NAME OF DEALER.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Below stand- ard.	Cream.
Schlanker, Chas.	3.7	4.5	3.8	4.2	3.2	3.5	3.5	3.7	3.5	3.4	3.7	3.7	16.3	
Schoenfeldt, G.	4.2	4.6	4.7	4.7	4.7	5.1	4.2	4.2	4.2	3.3	3.3	3.3	16.5	
Scott, A. W.	4.0	3.9	4.0	3.8	4.1	3.6	3.5	3.5	3.5	3.5	3.5	3.5	20.4	
Scrubby Bros.	4.0	3.9	4.0	3.8	4.1	3.6	3.5	3.5	3.5	3.5	3.5	3.5	17.0	
Shoemaker, H. S.	4.0	3.9	4.0	3.8	4.1	3.6	3.5	3.5	3.5	3.5	3.5	3.5	18.0	
Silverman, M.	4.0	3.9	4.0	3.8	4.1	3.6	3.5	3.5	3.5	3.5	3.5	3.5	26.7	
Smith, G. A.	4.0	3.9	4.0	3.8	4.1	3.6	3.5	3.5	3.5	3.5	3.5	3.5	17.7	
Smith, J. S.	4.0	3.9	4.0	3.8	4.1	3.6	3.5	3.5	3.5	3.5	3.5	3.5	18.0	
Smith, G. F.	4.0	3.9	4.0	3.8	4.1	3.6	3.5	3.5	3.5	3.5	3.5	3.5	26.7	
Starks, J. H.	4.0	3.9	4.0	3.8	4.1	3.6	3.5	3.5	3.5	3.5	3.5	3.5	17.7	
Stookey, D. M.	4.2	4.1	3.8	4.4	4.5	4.4	4.0	3.8	3.8	4.1	4.2	4.2	16.8	
Stradley, W.	4.0	3.9	4.0	3.8	4.1	3.6	3.5	3.5	3.5	3.5	3.5	3.5	15.2	
Strickland, L. M.	4.5	4.3	4.1	3.8	4.0	4.1	3.7	3.4	3.4	3.4	3.4	3.4	21.0	
Stubbs, Wm.	3.6	3.9	4.1	3.8	4.0	4.1	3.7	3.4	3.4	3.4	3.4	3.4	16.8	
Terry, A.	4.1	3.6	3.7	3.4	4.1	3.9	4.7	3.7	3.7	3.5	3.3	3.0	18.0	
Terry & West.	4.0	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	25.2	
Thomas, W. H.	2.5	3.8	3.5	3.8	3.7	3.8	3.6	3.6	3.6	3.6	3.6	3.6	18.0	
Tyler Bros.	4.0	4.2	4.5	4.6	4.3	4.1	4.1	4.5	3.9	3.4	3.4	3.4	25.5	
Vail's Restaurant.	3.3	4.0	1.7	1.9	3.5	3.7	4.3	3.6	3.6	3.6	3.6	3.6	19.8	
Van Hyning, W. F.	3.7	3.9	3.4	3.4	3.5	3.7	4.3	3.6	3.6	3.6	3.6	3.6	24.9	
Vanderlinden, L. J.	3.4	3.5	4.0	3.3	3.3	3.9	3.8	4.0	4.2	3.7	3.7	4.2	20.8	
Von Stueben, J. P.	3.8	3.4	3.6	3.6	4.1	4.4	4.0	4.2	3.7	3.7	3.7	4.2	16.1	
Wallace, W. J.	2.7	3.7	4.1	3.3	3.3	3.5	3.5	3.5	3.6	3.6	3.6	3.6	21.0	
Watts, F.	3.5	3.4	3.5	3.6	3.8	4.4	4.3	3.7	3.7	4.1	3.6	3.8	19.0	
Weissinger & Miller.	4.0	3.6	4.5	4.5	4.5	4.5	3.7	3.7	3.7	4.1	3.6	3.8	14.4	
West, F.	3.5	3.9	3.4	4.1	3.7	3.7	3.3	3.3	3.3	3.5	3.5	3.5	16.1	
Wilson, D. F.	4.1	3.5	3.5	3.9	3.8	3.9	3.5	3.7	3.3	3.3	3.5	3.5	21.0	
Wilson, P. G.	3.5	3.6	3.7	4.0	4.0	4.1	3.4	3.7	3.7	3.5	3.5	3.5	19.0	
Wollbrige.	3.9	3.9	3.9	3.9	3.8	4.3	3.9	3.5	3.5	3.5	3.5	3.5	14.4	
Wood, W. F.	3.9	3.9	3.9	3.9	3.8	4.3	3.9	3.5	3.5	3.5	3.5	3.5	16.1	
Wormlesdorf, T. H.	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	21.0	
Young, E. B.	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	19.0	

DUBUQUE.

Number of permits, 49.

Adam, Mike.	4.4	3.2	4.4	3.2	4.0	4.0	4.4	3.6	4.0	4.4	3.4	3.4	3.4	3.4
Albrecht, G.	4.0	4.0	4.2	3.6	3.2	4.0	3.8	3.6	4.0	4.2	3.4	3.4	3.4	3.4
Bobzien & Below.	4.0	4.0	4.2	3.6	3.2	4.0	3.8	3.6	4.0	4.2	3.4	3.4	3.4	3.4
Brenke, C.	4.4	4.8	3.2	4.0	3.8	3.8	4.0	4.2	4.8	4.1	3.3	3.8	3.8	3.8
Buckingham, T.	4.1	5.0	3.7	4.0	3.8	3.8	4.0	3.2	3.2	3.2	3.8	3.8	3.8	3.8
Beadle, Chas.	4.2	4.6	4.2	3.6	3.6	3.8	3.2	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Couzett, A.	5.0	4.4	4.4	3.8	3.8	4.3	3.2	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Cushung, Mell.	3.4	4.0	3.7	3.8	3.8	3.7	3.9	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Duggan, Jas. T.	4.4	3.2	4.0	4.2	4.0	4.2	4.2	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Enzler, Mrs. M.	3.8	4.0	4.3	3.8	3.6	4.0	4.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Fluetsch & Sons.	3.2	4.0	3.9	4.6	4.2	3.9	4.0	3.9	3.6	4.0	3.6	3.8	3.8	3.8
Farrel, F.	3.4	3.4	3.8	4.0	3.6	3.2	4.0	3.8	3.8	3.8	3.8	3.8	3.8	3.8
Gadient, John.	4.2	3.6	4.1	3.6	4.8	4.3	4.0	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Gartner, A.	3.2	3.0	3.8	3.2	3.6	3.6	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
Hick, M.	4.0	4.0	4.0	4.2	3.3	4.0	3.6	4.2	3.6	3.6	3.6	3.6	3.6	3.6
Hackert, A.	4.2	4.6	3.4	3.8	4.0	3.4	4.2	4.0	3.6	4.0	4.0	4.0	4.0	4.0
Helme, E.	4.7	3.8	4.1	4.3	4.0	3.9	4.2	4.0	3.6	4.0	4.0	4.0	4.0	4.0
Herron, H. L.	4.6	4.0	4.0	4.0	4.0	4.0	3.6	4.4	4.8	4.0	4.0	4.0	4.0	4.0
Hofertlin, J.	4.0	4.6	3.4	3.6	3.2	4.2	3.2	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Howarth & Pressley.	3.8	3.4	3.8	4.1	4.1	4.0	3.8	3.9	3.8	3.9	4.4	4.4	4.4	4.4
Jecklin, J. H.	3.8	4.1	3.9	4.0	4.1	4.0	3.6	4.0	4.8	3.6	4.5	3.6	3.6	3.6
Knockle, A.	4.0	4.0	3.4	5.0	3.2	3.4	3.6	4.0	4.8	3.6	4.5	3.6	3.6	3.6
O'Meara, J.	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Meyer, H.	4.1	4.0	3.8	3.4	3.7	3.7	3.4	3.2	3.8	4.3	4.4	3.7	3.7	3.7
Musshel, G.	3.8	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Miller, J. O.	4.0	3.8	3.8	4.0	3.8	4.2	4.6	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Metel Bros.	3.6	4.0	4.1	4.0	3.6	4.0	4.2	4.0	3.4	3.4	3.4	3.4	3.4	3.4
Metcalfe, R.	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Peysi, Rudolph.	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
Pfal, F. J.	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Paley, A.	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Seemon, P.	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Sheridan, B.	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6

DUBUQUE—CONTINUED.

NAME OF DEALER.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Below stand- ard.	Cream.
Spenetzky, A.	3.8	4.2	4.5	4.2	4.0	4.6	4.0	4.2	4.2	3.6	4.4	4.4	4.4	4.4
Sutter, L.	4.0	4.4	3.9	4.0	4.0	3.6	4.0	4.0	4.0	3.8	4.0	4.0	4.0	4.0
Schlegel, M.	4.1	3.6	3.8	4.1	3.8	3.7	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Thorman, G. A.	4.0	4.0	4.2	3.6	4.4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Walker, C. H.	4.0	4.0	4.2	3.6	4.4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Weiland, A.	4.0	4.0	4.2	3.6	4.4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Ziegler, C.	4.0	4.0	4.2	3.6	4.4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

FORT MADISON.

Number of permits, 16.

Beelman, J. W.	4.2	3.8	3.3	3.8	4.1	4.1	4.1	4.1	4.2	3.9	4.0	3.3	3.3	3.3
Burton, James.	4.6	4.6	4.3	4.4	4.7	5.0	4.8	5.0	4.5	4.9	4.3	4.3	4.3	4.3
Conrad, George.	3.9	3.9	3.8	3.9	4.5	4.1	4.2	3.9	3.9	3.9	4.4	4.6	4.6	4.6
Currier, T. O.	4.4	4.0	4.3	4.0	4.4	5.4	4.0	4.0	4.0	3.5	3.9	3.9	2.6	15.0
Crosley, Ed.	3.6	3.7	3.7	3.7	3.9	4.2	3.4	4.1	3.7	4.0	4.8	3.6	3.6	3.6
Drollinger, F.	3.7	3.6	4.0	4.6	4.5	4.5	4.5	4.1	4.2	4.0	4.0	4.0	4.0	4.0
Janse & Smith.	4.0	3.9	4.6	4.2	4.5	5.3	4.3	4.8	4.6	4.2	4.5	4.3	4.3	4.3
Jones, L. G.	3.9	4.2	4.3	5.6	5.2	4.5	4.3	5.2	4.6	4.2	4.5	4.3	4.3	4.3
Knapp & Holland.	3.7	3.8	3.8	3.9	3.9	4.1	4.1	3.8	4.0	4.1	4.4	4.1	4.1	4.1
Mansheim, John.	4.1	4.4	4.3	4.5	5.2	4.9	4.5	4.1	3.8	4.6	4.4	4.3	4.3	4.3
Mansheim, Mrs. B.	3.7	3.8	4.1	5.2	5.0	4.6	5.4	5.0	4.5	3.9	4.8	3.7	3.7	3.7
Shurk, Frank E.	5.0	5.0	5.1	5.0	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Smith, W. B.	4.3	4.5	5.1	5.0	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Stewart, Wm.	4.3	4.5	5.1	5.0	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5

KEOKUK.

Number of permits, 17.

Driffield, H.	4.2	4.7	4.8	5.4	5.5	5.1	4.6	4.7	4.7	4.0	3.0	4.7	...	...
Emerson, M. E.	4.2	4.2	4.9	3.9	4.0	3.8	3.8	...	...	4.8	...	...	...	...
Hazen, A. D.	4.3	4.2	4.5	4.9	4.8	4.5	4.9	4.2	4.0	3.1	3.9	4.5	...	...
Harshman, F. N.	...	...	...	...	...	...	...	4.2	4.2	4.0	4.3	5.0	...	...
Howell, A. R.	...	...	...	...	...	...	...	...	...	3.9	4.0	4.6	...	...
Hunt, R. A.	4.1	4.6	4.7	4.5	4.6	4.1	3.9	4.5	4.2	4.0	3.6	4.6	...	...
Ketterer & Koss.	4.2	4.8	4.5	4.9	4.8	4.6	4.6	4.4	4.2	4.2	4.2	4.6	...	...
Keokuk Dairy Co.	3.8	5.4	4.6	4.3	3.6	4.0	4.0	3.7	3.7	3.4	3.2	3.8	...	...
Knox, John.	3.8	4.0	4.0	...	...	...	...	...	...	...	...	...	...	...
Lange, Fred.	3.6	4.4	4.8	4.0	3.6	4.0	3.8	5.2	4.4	4.2	3.8	4.6	...	...
Lafeber, J. D.	...	...	...	...	5.2	4.4	4.7	4.8	4.2	...	...	4.0	4.2	...
Nelson, C. G.	5.1	5.3	5.0	5.7	5.3	5.0	5.0	5.0	4.6	4.4	4.8	5.0	...	...
Patterson, D.	5.1	5.5	4.8	4.2	4.0	4.6	4.9	4.1	4.0	...	...	...	...	...
Rein, Henry.	4.4	4.6	4.3	4.7	4.6	4.1	4.2	4.6	3.9	4.2	3.9	4.7	...	...
Safford, C. C.	4.5	4.5	5.0	4.5	4.4	4.4	5.0	4.2	3.9	4.6	3.3	4.4	...	...
Sample, J. L.	4.0	4.0	4.6	4.2	3.8	4.0	4.1	4.0	4.1	3.5	4.0	4.2	...	...
Schauppach, W. J.	4.0	4.1	4.7	4.6	3.4	3.8	4.0	4.6	4.0	4.0	3.4	4.9	...	...
Weyland, W. G.	4.3	5.0	4.0	5.6	3.8	4.2	4.1	4.2	4.4	3.8	5.0	4.0	...	...

MUSCATINE—CONTINUED.

NAME OF DEALER.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Below stand- ard.	Cream.
Le Fevre, G. W.	4.6	4.6	4.8	...	5.1	4.4	4.9	4.8	4.3	4.2	...	4.1	...	24.0
Luendecker, O.	5.4	4.2	4.6	...	4.0	4.9	4.3	5.0	4.2	4.2	...	4.0	...	27.0
Mittman Bros.	4.0	4.4	4.4	...	5.0	6.6	4.5	5.3	6.4	...	...	4.5	...	20.7
Nagei, P. W.	4.3	4.0	5.4	...	4.5	5.0	4.9	4.7	4.4	4.0	...	4.2	...	25.0
Oberhaus, S.	4.2	...	...	...	...	...	5.3	5.0	4.2	...	...	...	...	...
Schwalm, H.	...	5.2	5.0	...	4.4	5.0	5.0	5.8	4.3	4.2	...	...	...	23.1
Washburn, Frank.	3.6	4.0	...	...	...	...	...	...	...	...	...	...	...	...
Will Bros.	4.2	4.2	4.5	...	5.6	4.4	4.4	4.7	4.1	4.0	...	4.2	...	...
Wintermute, B. K.	4.2	...	5.2	...	5.0	...	4.9	5.4	4.8	4.4	...	4.2	...	...

OTTUMWA.

Number of permits, 19.

Bizer, J. F.	4.0	3.2	4.0	4.0	3.9	4.0	4.5	4.0	4.8	4.8	3.5	3.4	...	...
Chrisman, W. P.	3.8	3.8	4.4	3.4	...	4.4	4.4	5.7	4.9	4.7	4.4	4.4	...	...
Cundiff, D. E.	4.6	3.7	4.7	3.7	4.0	...	4.4	4.4	4.9	4.4	3.9	3.9	...	...
Daggett, E.	4.5	4.0	4.6	3.1	4.8	5.4	4.6	5.4	6.7	6.4	9.0	4.0	...	...
French, Mrs. E. T.	3.9	3.7	4.2	4.0	4.8	5.4	4.7	6.4	9.0	4.0	...	...	...	...
Harsco, J.	3.4	3.8	8.0	4.5	4.1	4.1	4.9	4.2	4.7	4.8	4.2	4.2	...	...
Hutson, T. L.	3.9	4.1	5.4	5.0	6.6	4.0	5.0	5.5	4.9	4.3	4.1	4.1	...	...
Johnson, O. E.	4.7	4.2	4.0	3.8	4.4	4.8	5.0	4.7	4.7	4.7	3.9	3.9	...	...
Michael, B. F.	6.0	5.8	5.2	3.1	4.9	3.6	3.7	4.1	3.6	4.4	4.0	4.0	...	...
Montague, H.	4.6	6.8	4.4	4.7	9.0	5.7	5.2	5.2	6.7	6.2	6.8	4.6	...	...
Noble, T. H.	4.2	3.1	5.6	4.7	4.6	5.2	5.6	5.3	5.2	4.2	4.3	4.3	...	...
Otterberg, M.	4.1	4.0	9.0	5.1	5.7	4.3	5.0	5.0	4.8	5.9	6.2	4.5	...	...
Simmons, N. C.	3.8	5.0	5.0	3.3	4.1	4.3	3.2	6.7	4.0	4.6	4.4	4.0	...	...
Simpson, M. D.	...	...	...	...	...	4.9	...	...	...	4.6	...	...	...	...
Thornburg, T. M.	5.0	4.0	...	4.5	3.4	4.0	4.2	4.6	5.7	...	3.5	...	...	...

SIOUX CITY.

Number of permits, 63.

Baby Milk Dairy.	3.8	...	3.8	3.8	4.1	3.4	4.2	4.1	5.0	...	4.0	...	...	...
Bradstreet, Charles O.	3.2	3.2	3.6	3.6	4.0	3.8	...	3.8	4.1	...	4.0	...	...	...
Bradstreet, T. E.	3.6	3.6	3.9	3.6	4.0	...	...	...	...	...	...	...	...	...
Clark, H. D.	4.1	4.6	3.6	4.0	4.1	3.7	4.2	4.7	4.6	...	3.4	...	...	...
Campbell, O. W.	4.3	4.2	3.9	4.8	3.8	4.4	4.4	4.0	...	...	...	...	...	...
Fries, A. H.	...	...	...	...	...	4.0	4.1	4.0	3.6	...	4.3	...	...	...
Franklin, S. J.	3.6	...	4.0	3.6	...	...	...	...	...	...	3.4	...	...	...
Fetterson, A.	3.4	4.0	3.7	3.6	4.0	4.2	...	3.2	3.5	...	...	...	...	...
Gillmore, W. H.	...	4.3	4.2	4.2	4.7	4.2	4.0	4.0	3.4	...	4.8	...	...	...
Heath, D. B.	4.4	3.7	4.0	4.0	4.2	4.1	3.9	3.9	3.9	...	3.9	...	...	...
Herman, W. M.	3.6	3.7	...	4.0	4.2	4.1	3.9	3.9	3.9	...	4.0	...	...	...
Hanson, Louis	...	3.9	3.7	3.5	4.3	4.0	4.4	...	4.0	...	...	...	...	...
Jensen & Freese	3.9	3.3	3.6	3.8	4.0	...	...	...	...	...	...	...	...	...
Johnson, C.	3.8	4.0	3.4	...	4.5	4.0	4.0	3.0	3.8	...	3.8	...	...	...
Lynn Bros.	3.9	3.8	3.6	4.0	4.1	4.4	4.4	4.0	3.9	...	...	...	...	...
Lamb, W.	4.2	4.4	4.4	4.6	4.6	4.0	4.0	3.4	3.9	...	...	...	...	...
Mahoney, William	4.4	4.1	4.0	4.2	4.4	4.2	3.8	3.6	3.5	...	3.7	...	...	...
McMamara, E. E.	3.4	3.3	3.2	4.1	3.8	4.0	3.8	3.6	3.2	...	3.9	...	...	...
Morgan, C. H.	3.8	4.2	3.6	4.2	4.3	...	...	4.0	3.8	...	4.0	...	...	...
Moulin, W. H.	3.6	3.6	3.8	3.6	4.4	3.8	3.8	3.6	3.8	...	3.7	...	...	...
Newgard, A.	...	3.4	...	3.5	...	...	...	3.9	3.0	...	4.0	...	...	...
Olson & Son	3.5	3.4	3.8	3.6	4.4	4.0	3.5	3.8	3.8	...	4.2	...	...	...
Olson, Eric	4.0	...	3.0	3.2	3.2	...	3.6	3.4	3.8	...	3.8	...	...	...
Olson, Andrew	3.6	3.0	...	3.8	...	...	...	...	...	...	...	...	...	...
Perrasso & Gambreso	3.2	4.0	4.0	4.2	3.4	3.4	3.2	4.2	3.2	...	...	...	...	...
Pahl, L.	4.2	3.8	3.8	4.0	...	4.2	4.0	4.2	3.8	...	3.3	...	...	...
Perrin, E. E.	4.2	3.4	3.6	4.4	4.2	3.4	4.2	4.2	3.8	...	3.0	...	...	...
Ray, W. D.	4.2	4.2	4.6	4.0	3.9	4.0	4.0	3.8	3.8	...	3.0	...	...	...
Reise, C. B.	3.2	3.0	3.4	3.2	3.0	3.8	3.6	4.0	3.4	...	...	...	...	...
Robinson, C. M.	4.4	4.6	4.6	5.0	...	...	...	...	...	...	...	...	...	...
Rowe, N. J.	3.2	3.2	4.0	3.6	3.8	4.3	4.0	3.8	3.5	...	3.0	...	...	...
Sherman, E. D.	4.0	...	4.0	...	4.6	...	...	3.5	3.0	...	...	...	...	...
Sorenson, C.	3.0	4.5	3.1	3.7	4.0	4.0	3.8	3.3	...	...	...	...	...	...
Storror, A. W.	3.6	4.0	3.7	3.2	3.8	4.0	3.3	3.8	3.3	...	...	...	...	...
Swanson, S. A.	3.2	4.2	3.5	3.4	4.6	...	4.0	3.9	4.0	...	3.1	...	...	...
Sellon, J. J.	3.2	3.4	3.2	4.0	4.0	3.4	...	3.6	...	...	3.4	...	...	...
Treadwell, T. P.	3.4	3.4	3.4	3.6	3.8	3.6	3.5	3.4	3.0	...	3.4	...	...	...
Talbot, T. R.	3.4	3.4	4.2	4.0	4.5	3.9	4.2	3.4	4.2	...	3.8	...	...	...

TABLE NO. 14.

CITIES.	Population cen- sus of 1895.	Permits for 1898-99.	Number selling whole milk.	Number selling cream.	Number selling skimmed milk.	Number of fam- ilies supplied.	Number of ho- tels, restau- rants, etc.	Yearly value of milk sold.	Jerseys.	Grade Jerseys.	Holsteins.	Grade Holstein.	Short-horns.	Grade Short- horns.	Common or not reported.	Total cows	Average in- come per cow.
Burlington.	95,246	30	30	15	12	3,351	40	61,000	66	187	31	67	24	170	1.0	655	\$ 77.90
Cedar Rapids.	21,555	43	48	25	18	4,033	58	65,740	73	190	16	72	86	112	330	934	72.61
Clinton.	21,337	36	36	13	5	3,604	66	53,000	84	68	29	33	184	184	125	554	91.63
Council Bluffs.	20,189	29	29	13	4	1,868	66	41,000	50	51	43	23	37	37	65	410	100.00
Davenport.	30,010	77	77	45	30	8,312	124	109,200	126	125	111	45	87	104	685	2,764	85.11
Des Moines.	56,359	129	129	80	65	13,674	185	192,000	123	344	320	68	780	316	248	2,764	88.77
Dubuque.	40,574	50	50	21	8	5,023	97	89,500	63	113	49	20	59	31	600	195	89.94
Ft. Madison.	10,022	16	16	10	4	1,398	43	21,600	21	105	2	5	6	30	138	245	88.16
Keokuk.	14,287	17	17	9	2	2,336	73	38,000	109	81	15	14	30	40	41	423	90.14
Marshalltown.	10,049	16	16	10	9	2,970	65	35,600	25	94	17	17	24	117	12	368	87.04
Muscatine.	12,237	18	18	13	11	1,881	24	25,800	88	94	17	67	24	76	12	519	70.10
Ottumwa.	16,761	23	23	13	7	2,760	107	48,900	76	72	18	166	88	120	240	701	81.24
Sioux City.	27,371	51	51	28	15	3,122	63	58,000	54	81	91	82	30	120	240	701	80.17
Total.	308,037	540	540	294	190	54,932	1011	\$ 823,940	968	1537	751	709	1360	169	2909	9633	\$ 85.53