REPORTS OF ASSISTANTS AND INSPECTORS.

REPORT OF ASSISTANT COMMISSIONER.

HON. J. Q. EMERY,
Dairy and Food Commissioner.

SIR: I herewith submit a report of my work as Assistant Commissioner and Dairy Expert, during the biennial period ending June 30, 1908.

A full, itemized report of each inspection and test made by me has been submitted to you, upon the official form sheets and cards especially prepared for that purpose.

During the entire time specified, I have been actively engaged in the work of the commission as prescribed by law in making personal and careful inspections of cheese factories, creameries, city milk supplies, skimming stations, condensing factories, dairy farms and herds, oleomargarine dealers, grocery stores, restaurants and lunch counters, hotels, drug stores, flouring mills, icehouses and ice-delivery wagons, meat packing houses, sausage manufactories, butcher shops, delicatessen stores, and in the prosecution of violators of the dairy and food laws of the state.

Number of cheese factories inspected........................................ 135
Number of creameries inspected........................................ 20
Number of city milk supplies inspected.................................. 10
Number of skimming stations inspected.................................. 4
Number of milk-condensing factories inspected......................... 4
Number of dairy herds and barns inspected............................... 94
Number of grocery stores inspected..................................... 138
Number of butcher shops inspected....................................... 43
Number of hotels inspected.................................................. 13
Number of restaurants and lunch counters inspected.................. 28
Number of drug stores inspected........................................... 8
Number of flouring mills inspected...................................... 6
Number of fair concessionists inspected.................................. 26
Number of barn milk samples inspected.................................. 23
Number of prosecutions..................................................... 16
Number of convictions........................................................ 16

While engaged in the work of inspecting, I have collected and have delivered into the hands of the state chemist 143 samples of food products for analysis.

In connection with the work of farm, factory and city dairy inspection, I have tested several hundred samples of milk and cream
by means of the Babcock test, the lactometer test, the curd test, the acidity test, the formaldehyde test and the borax test.

I have scored approximately three thousand samples of butter and cheese by the official numerical and descriptive score cards for the U. S. Dept. of Agriculture and various interstate, intercounty and county fairs.

During the period covered by this report I have made addresses at several creamery and cheese factory picnics, morning and evening creamery and cheese factory patrons' meetings, farmers' institutes and dairy conventions.

A considerable portion of my time has been taken up in clerical work at the office and laboratory in the mailing of biennial reports, bulletins, pamphlet copies of dairy laws, circular letters and in proof reading.

I have made a number of second inspections of creameries, cheese factories and city dairies with other members of the commission. As a result, in several cases prosecutions and convictions followed work of this character. In this connection I beg to report that some of the prosecutions brought by Mr. Larson, Mr. Aderhold, and Mr. Carswell and reported by them were the result in part of such work performed by me in accordance with your instructions.

During the latter part of August, the month of September and the first half of October, 1907, I visited most all of the dairy boards of trade and wholesale cheese dealers in the state, acquainting them with Chapter 173 of the Laws of 1907, relating to the misbranding of articles of food, which plainly makes a misdemeanor the too high marking of the weight of cheese.

I have tested a large number of samples of cream, milk, butter, and cheese, submitted to the commission from various sources through the mails and express companies and reported same to you on cards especially prepared for such work.

The inspection of the cheese and butter factories had to do principally with the sanitary conditions of the buildings, utensils, surroundings, the quality of milk received into them, and the process of making. A marked change has taken place in factory management. Buildings and utensils are kept more scrupulously clean, and cheesemakers and buttermakers are more generally becoming students of their profession rather than imitators of their predecessors. As a rule they are on the alert to catch any idea which may be of value in securing economy in the manufacture of the product, perfection in caring for it and intelligence in its sale.

The inspection of city dairies included the milk delivery wagons and utensils of same used in the distribution of the product to the consumer, special attention being given to the sanitary conditions of the cattle, feed and farm or dairy barns. The quality of the milk supply of our cities is certainly improving. The dairymen are as a rule taking pride in furnishing their customers with pure milk, and their wagons are generally neat, clean, and nicely arranged. A large percentage of the city dairies inspected were provided with stables, having improved systems of ventilation, light and drainage, thus insuring the health and comfort of the herds.

This line of work carried on by this department during the past two years, coupled with vigorous prosecutions of offenders against the law, has materially reduced the number of milk producers who deliver milk below the legal standard to consumers, creameries and cheese factories. Many cheese factories of the state which had formerly received the milk by the quantity, are now using the Babcock milk test. Although not all are buying by butter fat test, yet they are quite generally equipped so that they may know the quality
CHEESE EXHIBIT, WISCONSIN CHEESE MAKERS' CONVENTION, 1908.
of each patron's milk and are refusing to accept milk that does not come up to the standard as prescribed by law.

There is a general disposition on the part of both wholesale and retail food merchants to comply with the provisions of the food laws of the state. Many of our merchants frankly admit their indebtedness to the commission, since the latter by enforcing the food laws, has eliminated in a very appreciable measure the element of deception and criminal imposition fostered and indulged in by unscrupulous manufacturers of food products.

CHEESE.

The quality of our cheese of all varieties has not only been maintained at the standard of previous years, but in all localities of the state the make of the last two years has been superior in every respect to that of former years. It is certain that there is an established and rapidly growing demand right here at home for the best types of domestic soft cheeses. I would not advise every cheesemaker to attempt to make all the fancy varieties of cheese. However, we have within our borders the intelligence, enterprise, climatic conditions, locations, the grass and water to make all kinds of cheese to perfection. We are fully competent to deal with this question of fancy cheese, and should adopt the making of the different varieties whenever there is a demand for them.

The best and none but the best, fitly expresses our motto. The result is that we have established a good name for our cheese in every market where it is known, a good name justly deserved, because won by merit. There is no filled cheese manufactured in Wisconsin. We have waged an uncompromising war on all fraudulent cheese and have sought to place our product upon the market, whether at home or abroad, for just what it is. The true Wisconsin cheese factory brand is today a guaranty of excellence and genuineness in the best cheese markets of the world.

There are good reasons why cheese-making must always remain a prominent factor in our state. The product of the cheese factory is a finished product. It represents the embodiment of highly skilled labor. It goes to market in a concentrated form. The manufacture of cheese, no matter how intensive a system of agriculture is pursued, leaves the farm no poorer in natural wealth and fertility. As we advance in cheese-making, as we improve our dairy products, our cows and our methods, we extend the market for our cheese. We have not reached the point of over-production. The demand continues to be largely in excess of the supply.

Great as has been the growth of manufacture, mining, trade and transportation in Wisconsin, all of which tend to draw population from dairying, it is gratifying to note that of all the diversified interests of industry and agriculture, none has prospered or afforded us more substantial returns than the cheese business during the past few years.

Cheeses of different varieties have their origin because of the surroundings in which they originated. For instance, in the low, flat meadows of Holland, the Limburger cheese had its birth; and when they came to make Limburger cheese in America, they found the same kind of locations especially fitted for the production of this cheese. That is, low valleys, abundance of rich grass, plenty of water, the same as in Holland.

On the other hand, the Swiss cheese is a product of a higher elevation. It became what it is because of its circumstances and surroundings. With high mountains, no highways, no railroads, it became a necessity, in order to dispose of the milk product, to make
it into a kind of cheese that would bear transportation, have long-
keeping qualities.—keep for years in good condition. When they
came to establish that industry in America, they found the same
surroundings that are not so well fitted for general farming, where
the fields are not cultivated or plowed at all, where the hillsides are
so steep that the soil will wash away, and where there is plenty of
rock near the surface, chiefly limestone rock, and where good springs
of water abound, to be especially favorable to the production of fancy
Swiss cheese. There are numbers of such places in the States, but
the greatest body of such land lies in southwestern Wisconsin. That
tract of country never has been covered by the so-called drift forma-
tion. The hills rise in great waves and billows, with narrow valleys
and underlaid with hundreds of feet of layers of limestone, frail and
crumbling, affording the best kind of soil. That is the home of the
Swiss cheese industry in America.

Wisconsin people make great quantities of brick cheese, and when
they want something excellent for favored customers they send to
Dodge county and adjoining counties for it. There is something in
the soil, the spring water and the grasses in that particular section
that is especially favorable to the making of brick cheese.

Edam and other varieties also require special conditions. There-
fore, it is wise, when a certain kind of cheese has been successful in
one locality, not to try to change.

It is a good thing for people to devote themselves to the manufac-
ture of the kind of cheese that their natural conditions and their ex-
perience favor. For instance, it would be almost impossible to pro-
duce a good quality of Swiss cheese in the lake region where we
produce such excellent Cheddar cheese. It is a matter of climate,
soil, water, kind of milk and other circumstances.

"AMERICAN" CHEDDAR CHEESE.

The "American" or Cheddar types of cheese are manufactured to a
greater or less extent in all parts of the state.

The eastern or lake tier of counties embracing Sheboygan, Manito-
woc, Calumet, Kewaunee, Door, Fond du Lac, Brown, Outagamie
and adjoining counties to the north and west lead in the production of
fancy Cheddar cheese so far as quantity is concerned.

Grant, Sauk, Richland, Iowa and adjoining counties constitute the
famous southwestern Cheddar cheese territory of Wisconsin.

Cheesemaking is an art most difficult of mastery. When we con-
sider the effect of fermentation and bacterial influences, the unknown
conditions of milk as received at the factories, the hidden power of
rennet action and the intricate combinations which any or all of these
form to effect the final result, any attempt to fully describe and attach
the proper importance to all the facts and principles which underlie
cheese-making is an undertaking beyond the knowledge and experience
of the author of this report.

The recognized peculiar and varied tastes of cheese consumers call
for many different characters of cheese; but the cheese that commands
the highest price in the markets of today is one of a clean, nutty
flavor, flinty and close in texture, with a firm, meaty, solid, rich and
buttery body. Cheese of such a character will keep a long time in
prime condition, and if cured under the most favorable temperatures
will improve in quality up to twelve or more months.

Fancy cheese cannot be made from filthy, sour milk. In the handling
of pure, sweet milk, the whole mass collected in the vat is gradually
warmed up to 86° F., when the milk is tested (by means of either
the rennet test or the acidimenter) for ripeness, and if sufficiently ma-
tured, the color and rennet is added at once. If the milk is insuf-
sufficiently matured, from one to two per cent starter (commercial pasteurized) is then added, and the milk allowed to stand at this temperature until a sufficient amount of acid has developed so that the curds will show one-eighth of an inch of acid when applied to the hot iron or .20 per cent acid by the acidimeter, within two hours from the time of adding the rennet, at which time the whey should be removed.

None other than harmless or vegetable color should be used and in any case should be thoroughly incorporated with the milk before the addition of the rennet. The latter should be added in sufficient quantities to cause the milk to coagulate ready for the knife in from twenty to twenty-five minutes. It should be diluted with about fifty times its own bulk of cold water that the coagulation will be uniform throughout the whole mass.

When the curd breaks clean across the finger and is sufficiently firm to stand up before the knife, it is ready for cutting. Great care should be taken to secure an "even cut" so that the curd particles will be uniform in size. Every piece of curd in the vat should be warmed alike. The center of each piece should be just as warm as the outside. As curd is a poor conductor of heat, this condition can be secured only by raising the heat slowly and steadily. The effect of heating rapidly is to cook the outside of the larger pieces of curd faster than the inside. This contracts the surfaces and confines the whey in the center. It would be preferable if possible, to heat the inside of the cubes the faster, driving the whey to the surfaces; we do not want to do either. We want an even, uniform cook.

One of the most important steps in the process of cheese-making is to know when a curd is properly cooked or firmed. The real condition can hardly be described in words, but the cheesemaker must learn to recognize it by experience. This is a part of the cheesemaker's art. The curd should not be saly or soft, but springy and elastic. The most convenient and sure test is to take up a large double handful of the curd and compress it dry of whey. After a minute remove the pressure. If it falls apart readily and the particles resume their former shape and size, it is very good evidence that the curd has been properly firmed.

It should then have one-eighth of an inch acid on the curd (or .20 per cent acidity as shown by the acidimeter) and the whey should then be drawn. When the whey is allowed to remain too long with the curd, excess acid is developed and a dry, mealy cheese is the result. There will also be a greater loss of fat. If the whey is drawn too early, a soft, mushy article will be produced. The necessity of diligence and care in this branch of cheese-making is of vital importance in order that the separation of whey may be the most perfect possible.

From thirty-five to forty-five minutes should be consumed in raising the temperature to 98° or 100° F., as the case may be. To assist the curd in heating evenly and keep it from matting together, it should be stirred from the time it is cut until the heat is shut off. The automatic curd agitators now on the market are preferable to the hand rake commonly in use.

When the required amount of acid has developed in the curd, the whey is drawn, and the curd dipped upon racks where it is left to drain and mat, having uniform depth of about five inches. If the curd has been properly firmed in the whey, it will not require any stirring at the time of racking, for this means an additional loss of fat and solids. As soon as the mass is matted sufficiently to admit of its being turned over without crumbling, it should be cut into blocks of sufficient size for handling and turned over, repeating the process every few minutes, always with a view to perfect drainage. The best-textured, close, firm-bodied cheese is that made from curd that has been piled but very
little, or not at all. If curd is piled, it is important that the outside pieces be iodized into the center of the pile each time to insure an even color and uniform temperature or from 96° to 98° F., throughout the mass. When the curd is sufficiently ripened or matured for milling, it becomes stringy or meaty, and when pulled apart splits instead of breaking. In cutting through the mass, the color should be even, with no white spots showing. At this stage of the process, when the curd is in normal condition, it will probably have at least one inch of fine silkiy threads when applied to the hot iron and will show from .70 to .85 per cent of acid by the acidimeter. The acid should be well developed at this stage of the process, but the amount of acid is not so important as that the curd be meaty in texture. Knife mills ought always to be used as peg mills tend to bruise and tear the curd, injuring the texture and causing unnecessary loss of butter fat.

After the curd is ground, it is kept sufficiently stirred to keep the particles from matting together again. A further maturing of the curd takes place, during which it takes on a peculiar flavor resembling the odor of clean, rich, ripe cream when ready for the churn. It is extremely difficult to convey in words a definite idea of that peculiar condition characteristic of curd when ready for the salt. That is to be gained through experience. However, resort is had to the hot iron test which furnishes two kinds of evidence. If when a portion of curd is applied to the hot iron, it strings nice and silky and if when so applied it emits an odor like nice toasted cheese and does not smell like burnt hair, it is usually ready for salt. The drippings from normal curds at time of salting will usually show from 1 to 1.2 per cent acidity when tested by the acidimeter. Still these tests are not absolutely reliable in all localities and under all circumstances. Another method of gaining the desired information is by the sense of feeling and the condition of the moisture which oozes out between the fingers when the curd is squeezed in the hand. The curd when ready to salt should not feel harsh, but soft and velvety and will exude a moisture of half fat and half whey. When salted, a clear brine should run from the curd. The temperature at time of salting should not exceed 90° F. After the salt is added the curd should be spread out thin, so that it will cool off, and when it is put to press should be at a temperature of from 75° to 85° F. If the curd is put to press too warm, the fat is more easily pressed out and lost.

With the majority of the rank and file of cheese-makers, it is not necessary that much should be said about the hooping and bandaging of cheese. The careful painstaking maker is an artist in a way and takes great pride in turning out a neat appearing cheese, symmetrical in form, neatly bandaged and perfectly closed on its surfaces. Still we often, too often, find makers who are slack in this very important part of the work. They have more or less difficulty in getting their cheese properly closed. This is true of some makers even when the curd is in the most perfect condition for pressing. Through negligence, they permit the press cloths to become stiff and full of whey while the hoops are not always kept scrupulously clean. No amount of pressure will secure a good rind if the press cloths and hoops are not in first class condition. If factory operators were to exercise more care and devote more time and attention to the work of hooping and dressing the cheese, there would not be so many goods upon the curing tables with checked rinds and showing free fat under the bandages.

At the time of turning the bandages all the whey should be rinsed out of the press cloths by dipping them in scalding water and placing them again upon the cheese as hot as possible. In the morning, the cheese ought always to be turned end for end in the hoop. When taken out they should be examined carefully to see that they are per-
WISCONSIN CHEESE MAKERS' CONVENTION, 1908.
feet in shape, and all defects remedied. Then pour water sufficiently hot to melt all free fat that may have accumulated under the circle cloth and bandage over the cheese again before applying the pressure. This warming of the surfaces aids in the formation of a firm, transparent rind and prevents the cheese from checking. It also improves the appearance of the cheese.

With cheese as with anything else we must try to please the eye. Marketing cheeses that are of unequal height or lopsided from some defect or carelessness in the making is always poor economy. Let us remember that cheese is an article of food, and that it should not only be put up in a neat, attractive form, but also that it should not come in contact with anything having a bad odor.

Recent experiments by Drs. Babcock and Russell of the Wisconsin Agricultural Experiment Station and the Dairy Division of the United States Government, have demonstrated that the quality of cheese was best when cured at temperatures ranging from 35° to 40° F. or thereabouts. Cheese cured at 50° F. were better than those cured at 60° F. Cheese cured at 60° F. were better than those cured at 70° F. This leads us to believe that much lower temperatures than have heretofore been thought advisable in ripening Cheddar cheese may be used with very considerable success. The dipping of cheese in hot paraffin will add to the attractiveness of the goods, and tend to prevent mold growth and excessive shrinkage in storage.

**BRICK CHEESE.**

Dodge county is the home of the brick cheese industry in the state. Columbia, Washington, portions of Ozaukee, Jefferson and Fond du Lac counties produce large quantities of this popular type of cheese.

Brick cheese is probably so called because it is made in the form of a brick, and bricks are used exclusively for the pressure on the mold. It is purely an American product. Wisconsin leads in its production. It is a sweet, whole milk, rennet cheese. It has a mild flavor, is moist and its convenient shape and size make it a special favorite with the trade. It is a rich, good, wholesome family cheese. It may have a few small holes or eyes in it. It is softer than Swiss but not so soft as Limburger.

Brick cheese is made in a steam heated vat. The curd is cut and the temperature raised for firming, the same as with Cheddar. The rennet is added to the milk at 86° F. Brick cheese is a quick curing cheese, and a little more rennet is used than for Cheddar. The milk is sweeter than for Cheddar and enough rennet is used to coagulate it in twenty minutes. The firming temperature depends on the acidity of the milk. With milk nearly as matured as for Cheddar, 108° F. will do; while from 112° to 120° F. may be required for very sweet milks.

The curd should be dipped from vat into moulds when it has reached a condition almost as firm as that for Cheddar cheese. An over-cook will make the cheese dry and hard, and an under-cook will make it too soft, approaching the Limburger.

The draining table is about 3 feet wide by 8 feet to 12 feet long, inclined toward one end with sides about five inches in height. Draining boards having several rows of one inch holes bored through them, with their ends resting on one-half inch strips, are laid in the draining table and a heavy, coarse-meshed linen cloth is thrown over the draining boards upon which the molds are set side by side. The brick cheese mold is a rectangular box without bottom or top and is thirty inches long by five inches wide and eight inches deep. The cheese from this mold is cut into three bricks ten inches long and five inches wide.
In dipping the curd into the molds, care should be exercised to get the same amount of curd into each so that the cheese will be uniform in size and will weigh close to six lbs. green. One or two bricks are placed on top of the wooden follower in each mold for pressure. In about an hour the mold is turned over and the pressure applied to the other side. This should be done several times during the eighteen to twenty hours that the cheese is in the press or molds.

The salting table is built like the pressing or draining table except that there are no draining boards laid in it. From the molds the cheese is rubbed with salt on all sides of it. The salt dissolves and penetrates to the interior of the cheese, at the same time expelling moisture which runs off from the salting table. The salting usually extends over three days, the cheese being turned each day and salted daily on all sides. They are laid on their broad sides, piled one tier deep at first salting, two to three deep at second and third salting.

From the salting table the cheese is transferred to the curing cellar where it is laid on its broad sides on tiers of wood shelving, ranged along and through the room. After a week or ten days they begin to cure and form a smooth rind, when they may be placed on their edges. Each cheese is washed with clear water, or water into which a little salt has been dissolved, at least twice a week and at first oftener if necessary to keep them moist and free from mold.

In the course of about two weeks the harshness of the cheese begins to disappear and the body will break down in the fingers, and mold like wax, but should not be sold until it is about a month old.

For shipment it is wrapped in a heavy quality of Manilla paper and packed in boxes that hold twenty to twenty-five cheese, the net weight of the cheese in the box ranging from one hundred to one hundred and twenty-five pounds. Of recent years a considerable quantity of this type of cheese has been paraffined when ready for cold storage or for market with very satisfactory results.

LIMBURGER CHEESE.

The southwestern portion of Dane county is especially noted for the quality and quantity of its Limburger cheese. Limburger cheese factories are scattered over Green, Lafayette, Iowa, Grant, Dodge, Columbia, La Crosse, Trempealeau and Buffalo counties.

Limburger cheese is a soft rennet cheese made from whole sweet milk. It is found on the market in blocks or cakes, some five inches square and about two inches thick, wrapped in parchment, manilla paper and tinfoil. It has a soft texture, of a yellowish color when properly ripened. It is perhaps more generally known by its odor than by anything else. While kept cool it does not have such a pronounced odor as when warm. The American Limburger is a very rich, nutritious cheese and is at present very popular with cheese epicures.

A steam vat, curd knives and drain table, like those for the manufacture of brick cheese, are used in the making of Limburger cheese but the molds and subsequent handling are different than for brick. The milk used may be sweeter than for brick. It should be set at 90° F. Enough rennet should be used to coagulate the milk in twenty to thirty minutes.

The curd is cut when it will break over the finger with a clean fracture. The curd is stirred and the temperature slowly raised to 96° F., the temperature at which it is usually firmed. The curd is dipped when a little softer than in the making of brick cheese. It is dipped into the molds and allowed to settle together, brick pressure being applied. After about half an hour it may be turned over. After resting in this position for thirty or forty minutes the mold is lifted
from the cheese. The long curd sections are divided into six blocks or
cakes five inches square just before salting.

The cakes are next transferred to the pressing table. The table is
like the brick cheese draining table, with sides, but having no draining
boards.

Formerly rows of the cakes were placed along one side of the table
and divided by wooden partitions. In this manner several rows were
laid down and the last strip held in place by several sticks wedged in
between the strip and the opposite side of the table. Now the gen-
eral practice is to drain in molds containing six cakes each. The
cheese get no pressure beyond their own weight. The cakes are turned
a number of times to drain them and firm the surfaces. The tem-
perature of the room should be about 65° F. In twenty-four hours
they go to the salting table. The edges are rolled over in a box of
salt and then salt rubbed on the two broad surfaces. They are laid
on the salt-draining table in single layers for the first day. The sec-
ond day they are salted again in the same way and piled two deep.
The third day they are again salted and piled three or four deep. They
are salted on the average about three days.

From the salting table the cakes are transferred to the curing boards
or shelves where they are set up on end. The temperature of the
curing room or cellar should be about 60° F. and have a relative hu-
midity of 90° or above.

The cheese cakes are washed daily to keep them free from mold and
to help keep them moist. Under these conditions their surfaces soon
begin to soften and change from white to a shiny yellow. This change
works its way to the center, changing the harsh curd to a soft, smooth,
creamy condition, and requires from four to six weeks after which
the cheese cakes are first wrapped in parchment, then manilla paper
and tinfoil, packed in boxes 20 inches wide, 5 inches deep and 36
inches long, when ready to market.

SWISS CHEESE.

Green county is the great Swiss cheese county of the state, and is
the home of the Swiss cheese industry in America. The district ex-
tends over into the eastern border of Lafayette and Iowa counties and
a portion of Dane and Rock counties.

Swiss cheese is known in the old country by the name of Emmen-
thaler. In this country it is made in two forms, the round or drum
Swiss and the block Swiss. This cheese is a hard, rennet cheese
made from unskimmed cows' milk and has a mild, slightly salty,
somewhat sweetish flavor. It should have eyes or holes about a half
inch in diameter, evenly distributed through the cheese. These holes
should have a glossy surface. In an old cheese a drop of brine may be
found in the hole.

Swiss cheese is made from sweet milk. So important does this seem
to be that in Wisconsin the milk is in all cases delivered to the fac-
tory twice a day and made into cheese as soon as the rennet can be
gotten into the milk.

But in Switzerland, Swiss cheese is to a large extent manufactured
only once a day. However, the milk is delivered twice a day to the
cheese factories. There, each cheese factory is equipped with a milk
cooling room with running water, where the night's milk is kept and
properly taken care of by the cheesemaker until the following morn-
ing, when it is mixed with the morning's milk and manufactured into
a Swiss cheese. Experts on Swiss cheese hold the once-a-day system
superior to the twice-a-day system, but it can be successful only when
the night's milk has all been alike properly cooled and cared for.
Swiss cheesemakers very largely use a home-made rennet, which is made daily by soaking strips of rennet in warm whey from the cheese kettle. It is claimed that commercial rennet extract is not as good as whey rennet, for they do not obtain the eyes in the cheese as well with it. It has, however, been fully demonstrated that the whey used acts as a starter which supplies the necessary acid in the milk to cause the rennet to expel the whey sufficiently and that by the judicious use of a good lactic acid starter and commercial rennet extract, cheese with good development of eyes can be obtained.

All Swiss cheese is made in large copper kettles. There are two kinds, the fire kettle and the steam kettle. The milk is strained into the kettle the same as into a vat for Cheddar cheese. Sufficient rennet is added to the milk at a temperature of 90° to 92° F. to coagulate it in from twenty-five to thirty minutes. A Swiss curd when ready to cut should make a clean break over the finger, though the degree of coagulation should be somewhat less than for other varieties of cheese.

The coagulum is broken into pieces about an inch in diameter by means of the Swiss harp, so called because it is shaped like a harp. It is an iron frame having a long wooden handle with fine wires strung lengthways of it about an inch apart. The curd is then gently stirred for a few minutes to keep it apart while it firms. This stirring of the curd is done with an instrument known as the "wire stirrer" which is a round stick about five feet long, through one end of which a group of wires are fastened into a spherical form. This stirrer reduces the size of the curd cubes to about the size of corn kernels.

The fine breaking down of the curd particles and the high temperature at which the cheese is cooked, largely cause the excessive loss of butter fat in Swiss cheese-making. By using such curd knives as are used in making Cheddar cheese, with change of design adapting them to the shape of the kettle, the curd could at once be brought into proper condition without breaking or jamming it, thus saving much of the fat now lost in Swiss cheese-making.

The kettle is now moved over the fire or steam is applied as the case may be, while the operator stirs it vigorously with the "wire stirrer" until the curd breaks and contracts into particles as fine as wheat kernels. It is stirred until the temperature has reached 130° to 135° Fahrenheit. The stirring is continued until the curd is quite firm, when it is allowed to settle.

As soon as the curd ceases to feel mushy and will break short when squeezed into a roll in the hand, or will squeak between the teeth, it is gathered up from the whey in a lump into a linen strainer cloth for pressing. The curd should be put into the hoop in a lump, and as quickly as possible, so that it will not become cool and brittle.

The curd cloth with the curd in it is put into a hoop made of a band of elm wood, held in circular shape by means of a cord running around it. The hoop rests on a circular press board on a table usually constructed of brick or stone, slightly inclined so that the whey will drain off. For the first few minutes it is pressed lightly, then more pressure is applied, and in half an hour full pressure may be put on. The cheese is turned several times a day. There are two cloths used in the operation, one lying underneath, the other spread over the top and tucked in between the hoop and the cheese. Dry cloths are put on frequently during the pressing period. The pressure is obtained by placing a post between the top cheese board and a heavy beam. The post is close to the fulcrum end of the beam, while the long, heavy end of the beam with weight attached gives the pressure.

After the cheese has been in the press for twenty-four hours it is placed in a salt brine bath, kept cool in the cellar. The brine is made
A TYPICAL WISCONSIN SWISS CHEESE FACTORY—NEW GLARUS, GREEN COUNTY.
by dissolving salt in water until dense enough to float an egg. As the cheese absorbs the salt it is necessary to renew same at frequent intervals. The cheese is immersed in the brine. It should be turned over occasionally as the cheese will float and the top rise above the surface. The cheese is kept in the brine from three to four days. Some makers salt by scattering coarse salt on top of the cheese. The cheese is kept on a shelf in the cellar with a salt hoop around it to keep the cheese from spreading. No more salt should be applied than can be absorbed over night, so that the cheese will be dry next morning. A cheese is salted with dry salt from three to five days. With the brine method the salting is applied more evenly through all parts of the cheese.

From the salting shelf or brine tank the cheese is taken to the cellar curing rooms. The curing covers two stages and two cellars are necessary to secure proper conditions for perfect curing. The first curing cellar should be kept at about 80° to 85° F. At this temperature the gassy fermentations set in and start the eyes. The large round cheese is kept on a round cheese board so that it may be handled easier. The cheese is kept moist and free from mold by frequent washing and scrubbing with cloths and brushes made for the purpose. After the eyes have been well started, the cheese is transferred to the second cellar which is kept at about 60° F. Swiss cheese cures slowly. The process requires a number of months and a fine Swiss cheese should be at least six to ten months old before it is ready for the consumer.

Block Swiss being smaller than drum or round, is more easily handled. It should be washed often enough to keep moist and free from mold but not too moist, or the rind will soften.

Drum Swiss are shipped in large tubs made a little tapering and to fit the diameter of the cheese. Usually five or six cheese are put in a tub with large round scale boards between each cheese and also at top and bottom of tub next to the cheese. Quite often a thousand pounds or more of cheese will be filled into a single tub. Block Swiss is put up in boxes six inches deep, twenty inches wide and three feet long. Six cheese are placed in such a box.

Our people until quite recently have known but little of the great variety of soft cheeses common in the European markets. The local markets have been to a great extent monopolized by hard cheeses, principally of the type of “American” Cheddar. Within the past few years a brisk demand for soft cheese has been developed here at home. This may be attributed partly to the taste acquired by our people who have traveled abroad, and to our increasing foreign population, and to the desire of people of European birth for the types of cheese familiar to them at home as well as to a growing demand and appetite among others who have tried the foreign delicacies.

The soft cheeses with their strong characteristic flavors, give relish to the coarser and less flavored foods and owe their chief popularity to their varied and respective flavors.

The so-called fancy cheese has come in response to a demand for variety from those who use cheese. Most all of our people are now eating cheese but all do not like to use the same kind in the same form for a long time. If nothing else is offered, a difference in the shape or style of the cheese will satisfy the longing or craving for variety. People no more care to eat cheese of the same kind and in the same form for a long time than they care to eat one kind of meat or dessert all the time.
BUTTER.

There is no reason why just as good butter may not be made from "farm" or "hand separator" cream as from any other; but to accomplish this it is necessary that intelligent care and scrupulous cleanliness be conscientiously observed at all times in the production and handling of such cream.

Cream ought to be delivered to the central or union churning station every day, and wherever that is possible, it is to be recommended. However, in some localities the daily delivery of cream would not be practicable, as the transportation expenses would eat up the profits of the business.

Cream given proper care may be kept in a sweet and wholesome condition for two days. Cream kept longer than two days, even though it is sweet, will lack the quality peculiar to fresh cream, and no amount of pasteurization, starter or any other process will enable the buttermaker to make a first class butter out of old, over-ripe, tainted or gaseous cream, or cream in any stage of putrefaction.

The application of pasteurization and commercial starters to cream handling and ripening is practical and advisable in many cases; but too often, like "charity" is practiced to cover a multitude of sins committed in some instances on the part of the cream-producing patron.

The ripening of cream is the most important step in the entire process of buttermaking. Cream ripening requires skill, training, suitable apparatus for controlling the process and painstaking care on the part of the operator. Under the present "farm separator creamery system," in many instances, this important work is now transferred from the creamery to the farm, for at least a part of the season. If Wisconsin expects to retain her position as a leading butter producing state, this very important work of cream ripening must again be restored to the buttermaker, and that will mean that the cream must be delivered to the churning station in a good, sweet, pure and wholesome condition.

The whole milk or separator creamery is especially suitable for localities having a dense cow population and where the public roads are good. The buttermaker has perfect and complete control of the cream ripening. More accurate testing may be done. There is always more difficulty in securing correct tests of cream than of milk. The defective methods in caring for the cream on the farm, and its infrequent delivery to the factory, makes accurate sampling extremely difficult and often very questionable. Cream of this description will also result in an inferior quality of butter. The whole-milk or separator factory reduces the labor and cost of separating and caring for the cream on the farm. It also reduces the expense for hand-separators to do the creaming as well as the labor of running and washing a separator.

The advantages of the "farm separator system" over the whole-milk factory system are its adaptability to a small cow population, scattered over a considerable territory, where the roads are not suitable for hauling heavy loads of milk. With proper railway facilities there is scarcely any limit to the extension of a creamery's operations. A much wider territory can be covered by the farm separator system than by a whole milk system, and it is well adapted for certain districts but we cannot expect to make as fine a quality of butter by adopting this system. It insures a large quantity of butter of uniform quality, although the quality attained may not be equal to that of whole-milk creamery butter. Its chief advantages are better and higher quality of skim-milk for feeding purposes, reduced cost of
AN ASSOCIATION GOLD MEDAL SWISS CHEESE.

As fine as the finest of imported Swiss.

Wisconsin is the Home of the Swiss Cheese Industry of America.
transportation, reduced cost of buildings and machinery to manufacture the butter and the opportunity which it affords for the extension of creamery territory.

The combination of a central creamery with a number of skimming stations, where the cream is separated and sent to the central for churning, overcomes the difficulty of long hauls for the milk and skim-milk, and tends to produce a large quantity of butter of a uniform quality.

The whole-milk creamery is more expensive to operate, but is favorable for producing the finest quality of butter, and in the end will pay milk producers best in the thickly settled dairy sections of the state.

The practice of taking in both milk and cream, and mixing the gathered farm cream with the factory separator cream, is fraught with very great danger to the quality of the finished product.

The majority of our buttermakers and cheesemakers understand their business well enough to make a first class article if they get good raw material. Our inspectors are not neglecting the patron. Patrons are made to feel the responsibility of their end of the cooperative system, and that if the milk and cream they supply the maker is not of good quality, he cannot be expected to make a fine quality of cheese or butter therefrom. This is getting at the root of the matter and is bound to work to the general good of the industry. Our inspectors have an oversight also over the factory building and while they have the power to enforce cleanliness by law, this is not generally taken advantage of excepting where other methods are ineffective. By counsel and advice, factory owners are induced to clean up and make needed improvements and thousands of dollars have been expended in this direction during the past two years.

The good offices of the members of the commission are coming more and more in demand amongst the people of the state.

Respectfully submitted,

U. S. BAER,
Assistant Commissioner.
SPECIMEN OUTFIT LIST

For 800 to 1200 Cow Cheese Factory.

1 12-H. P. Boiler complete with all fittings and stack.
1 8-H. P. Horizontal Engine, Complete.
1 4x6 Deep Well Pump.
3 Sets Automatic Curd Agitators.
1 36-bottle Turbine Tester, Complete.
2 Check Pumps.
2 900-gal. Whey Tanks.
3 600-gal. Improved Steam Cheese Vats.
2 Continuous Pressure Steel Gang Presses.
1 Curd Sink with Racks and Castors.
1 Power Knife Curd Mill.
1 600-lb. Scale, Double Beam with Wheels.
1 240-lb. Tin Scoop Counter Scale.
1 80-gal. Weigh Can.
1 Conductor Head and 10 feet of Trough.
50 14 1/4 in. x 7 in. Tinned Gang Press Hoops.
2 8-in. x 20-in. Horizontal Curd Knives.
2 8-in. x 20-in. Perpendicular Curd Knives.
4 Long-Handled Half-gallon Dippers.
1 Strainer Dipper.
3 Half-round Whey Strainers, with Spouts.
2 Tin Curd Scoops.
2 Flat-sided Curd Pails.
1 Marschall Rennet Test.

2 16-oz. Glass Graduates.
1 Tinned Cheese Knife.
1 Set Months and Dates.
1 Set Test Instruments with Quevenne’s Lactometer.
1 24-bottle Curd Test.
12 dozen Composite Milk Jars.
6 8-in. Floating Dairy Thermometers.
1 Hygrometer.
1 Shelf Scraper.
5 Galvanized Iron Pails.
1 6-in. x 5 1/4-in. Cheese Trier.
2 14-in. Wood-head Mops.
4 Floor Brushes.
6 Heavy Floor Brooms.
6 Scrub Brushes.
6 Composite Test Jar Brushes.
1 Bath Tub.
1 Office Desk.
1 Office Chair.
1 Sterilizing Oven.
5 4-ft. Cast Iron Radiators.
2 8-ft. Cast Iron Radiators.

Necessary connection pipe for boiler, engine, pump, wash-sink, tester, vats, radiators, and whey tanks.

Necessary check, globe, and angle valves for above connections.

Necessary ells, tees, unions, nipples, reducers, couplings, plugs, etc., for above connections.

Necessary shafting, hangers, wood-split pulleys, and belting for driving curd agitators, curd mill and well pump.
PLAN FOR CHEESE FACTORY.

BY U. S. BAER.

Boxing and Shipping Space

Curing Room 26' x 40'

Supply and Box Room 8' x 12'

Make Room

Office 8' x 10'

Drivers Shed 12' x 26'


P—Office Chair.
Q—Truck.
S, S, S, S, S, S—Steam Radiators.
REPORT OF SECOND ASSISTANT COMMISSIONER.

Hon. J. Q. Emery,
Dairy and Food Commissioner.

Sir: I herewith submit a report of work performed by me as Creamery, Dairy and Food Inspector for the period beginning July 1, 1906, and ending Feb. 4, 1907, and as Second Assistant Dairy and Food Commissioner for the period beginning Feb. 5, 1907, and ending June 30, 1908.

During the two years as above specified, the work of Inspector and Assistant has covered many lines. I have personally inspected 131 cheese factories and creameries, 117 meat markets, 15 slaughter houses, 237 grocery stores, 468 wholesale and retail oleomargarine dealers, 12 dairy barns and dairies and 1 city milk supply. As opportunity presented, I have inspected a great many milk and cream cans and ice cream cans and tubs at depots, also a number of city milk wagons and cans. In addition, I have collected 1,071 samples of food products suspected of being adulterated and have delivered the same into the hands of the chemist for analysis.

Prosecutions have been brought against 63 dealers as follows:

Creamerymen for operating unclean creameries; cheese factory men for operating unclean cheese factories; butchers for coloring and preserving chopped meats and oysters; dealers for selling the flesh of diseased animals; patent medicine men for selling adulterated extracts; dairymen for delivering milk in unclean cans; druggists for selling adulterated drugs; doctors for selling adulterated drugs; grocery men for selling adulterated food products; oleomargarine dealers for selling "oleo" in imitation of yellow butter.

In each case, except two, a conviction has been secured and fines ranging from $25 to $50 have been imposed. My observation is that prosecution of violators of the food law has a decidedly wholesome effect on the food dealers in the entire neighborhood where prosecution has been brought.

The owners and operators of the cheese factories and creameries are realizing the importance of up-to-date factories, equipped with modern machinery, and as a result great improvements are being made. In the main the factories and premises are kept cleaner and in a more sanitary condition than ever before in the history of the dairy business. However, in many cases, the addition of a few more windows to permit of more light in the cheese factories and creameries, and that of screens on the windows and doors to prevent the flies from swarming in, would be a great improvement.

Another much needed improvement among the creameries generally would be the installation of sanitary milk and cream pumps and pipes. The general practice of today is the use of iron pumps and gas pipes. These are said to be steamed out daily, but are always rusty and unsanitary. Should a dairyman drive up to any cheese factory or creamery in the state with a load of milk or cream in cans as rusty as the pumps and pipes used by the creamerymen for conducting the milk and cream through, the same would be rejected as unfit, and properly so.
Another very general practice among creamerymen is the use of the 40% and 50% cream bottles for testing cream. I want to go on record as saying that a test made by using either of the bottles mentioned is guess-work. Then again in many instances, the cream scale weights which are used for weighing the cream samples have been found to be inaccurate. The exacting of conditions of dairymen by the creamerymen, which conditions they are not willing to exact of themselves, or the use of cream bottles with which guess-work tests are made, or the use of inaccurate cream scales, is sure to bring loss of confidence by the patrons and will sooner or later prove disastrous to the creamery; therefore, the creamerymen of their own volition should make the necessary improvements, or legal steps should be taken to force them.

Because of the introduction of the hand cream separator, the larger part of the raw material delivered to Wisconsin creameries is cream. At a great many of the better creameries in the state, the practice is to test each delivery of cream. However, there are a great many that still make composite tests, which practice should be discontinued, as better results are obtained where each delivery of cream is tested.

A still further improvement among our creameries would be the practice of keeping daily records. Such records should consist of the total pounds of milk and cream received daily, the butter fat test, the total pounds of butter fat, the total pounds of butter made, the total fat loss in the skim-milk and buttermilk, the moisture content of the butter and the overrun. This will enable a creameryman to keep a check on his daily work and will be of great assistance to him in locating and overcoming losses that often occur in the course of handling the milk and cream and the manufacture of the butter, which, if left to run until the end of the month would, in many cases, amount to a great deal.

That the quality of milk and cream received at the cheese factories and creameries should be improved, is conceded. In a large degree the improvement of the raw material rests with the cheese maker or butter maker, who is under obligation not to accept any milk or cream that is not fit to be manufactured into cheese or butter, either from the fact of its being unclean or from cans not clean. So long as poor milk or cream, or milk or cream from unclean cans is accepted, improvement cannot be expected; but just as soon as the patron learns that there is no market for such unfit raw material, he will begin to make improvement. A further improvement could be brought about by the enactment of such laws as would give the members of the Dairy and Food Commission full power to inspect the conditions under which the milk and cream are handled at the farm and to enforce clean and sanitary conditions.

Another step in the direction of improving the quality of cream would be the amendment of Sec. 1, chapter 67, laws of 1903, so as to define unclean and unsanitary cream; also the amending of section 2, chapter 67, laws of 1903, by striking out the word “knowingly” and adding the word “cream”; also the amending of section 3, chapter 67, laws of 1903, by striking out the word “knowingly.” It would then be up to the patron and factory man to know that the milk and cream were clean and sanitary.

The inspection of meat markets, slaughter houses, fruit and grocery stores, has established in my mind the necessity of the enactment of sanitary laws. The meat markets in many cases have been found to be in a very unclean condition generally; the local slaughter houses likewise. A practice common among fruit and grocery dealers is that of displaying fruit of all kinds, fish, dried meats, etc., in the street, open to dust, dirt, flies and the unclean practices of dogs.
WISCONSIN CREAMERY BUTTERMakers' CONVENTION—MILWAUKEE, 1908.
The inspection of oleomargarine dealers disclosed the fact that nearly all of them desired to comply with the law; but the large packers persuaded many local dealers to handle oleomargarine that was in imitation of yellow butter. Oleomargarine dealers were visited and where the oleomargarine handled was found to be in imitation of yellow butter, the dealers were so informed, the law read to them, and a statement made to the effect that if upon another inspection it was found that oleomargarine of the same color was being sold, the state would contest it. The dealers would at once agree to return the yellow oleomargarine to the jobber or manufacturer and thereafter handle only such oleomargarine as was not in imitation of yellow butter. However, following my visit, a representative of the oleomargarine manufacturer would visit each dealer and agree to protect him to the limit if he would continue to handle the oleomargarine which I had claimed was in imitation of yellow butter; thus, in a number of cases the local dealers were persuaded to handle the yellow oleomargarine. Not until a prosecution was brought against a local dealer for selling oleomargarine in imitation of yellow butter and fought through the Supreme Court with the result that the Court held that the Wisconsin law prohibited the sale of oleomargarine which is in imitation of yellow butter and that the selling of oleomargarine that is in resemblance to yellow butter constituted a prima facie case, did the oleomargarine manufacturers respect the law. Inspections made after the Supreme Court decision disclosed the fact that the state oleomargarine law was being obeyed, in that the oleomargarine sold in the state was not in imitation of yellow butter.

An inspection of the milk and cream cans at various depots and of the city milk supplies goes to show that a great improvement has taken place. It is an exception to find milk or cream cans not washed before their return over the railroad, and in the main the cans used are in very good repair, free from rust, etc. The cans and wagons used in connection with the city milk supply are in the main in good repair and clean.

The ice cream business in this state is in its infancy, but the future will see great developments, therefore, it should have close attention. The great majority of ice cream dealers do not manufacture their own product, but buy from some large manufacturer who ships the ice cream as per order. When the empty cans are returned to the manufacturer, the retailer, generally speaking, makes no attempt whatever to clean the cans and they are often found on depot platforms in a very rusty, unclean, and bad-smelling condition.

The state law provides that skimmed milk cheese manufactured or sold within this state must be ten inches in diameter and nine inches in height. Last year a certain cheese manufacturer in this state undertook to manufacture skimmed milk cheese. Hoops of the desired measurement and other necessary machinery were provided. As soon as I learned of the undertaking, I made it my first business to inform the manufacturer as to the law on skimmed milk cheese and told him that the state would contest the manufacture or sale of such cheese unless the same complied with the law in every particular. He was desirous, however, of knowing what could be done and experimented for several days. Each day's milk was partly skimmed before making into cheese. In an effort to meet the requirements of the law, great care was exercised during the process of manufacture and in weighing the curd for each cheese. When the cheese were taken from the hoops and placed on the curing shelves they were measured and found to be of the size prescribed by law, but after remaining on the
shelves for a few days they would shrink, both in height and diameter, so much that it proved an impossibility to manufacture skinned milk cheese in conformity with the terms of the law. The manufacturer in question discontinued the making of skinned milk cheese after about three or four days experimenting and his lesson was learned to the tune of about $200, or the cost of machinery and milk that were used to make the cheese. There are so many avenues of fraud coming from the manufacture of skinned milk cheese that the state is to be congratulated upon having such a good law on the subject and the manner in which the law is obeyed, as I know of no factory in the state manufacturing hard skinned milk cheese.

BUTTER.

By chapter 205 of the laws of 1907 “the latest standards of purity for food products established by the United States Secretary of Agriculture” are made the legal standards of Wisconsin except in cases where other standards are specifically prescribed by the laws of the state. “The latest standards of purity for food products established by the United States Secretary of Agriculture” are found in circular No. 19 issued by the United States Secretary of Agriculture, June 26, 1906. Butter is therein defined as follows:

“Butter is the clean, non-rancid product made by gathering in any manner the fat of fresh or ripened milk or cream into a mass, which also contains a small portion of the other milk constituents, with or without salt or added coloring matter, and contains not less than eighty-two and five-tenths (82.5) per cent of milk fat.”

That a clear understanding may be had of the definition of butter, it seems best to define the chief products which enter into its manufacture—namely, milk and cream, which under the same provisions of law are as follows:

“Milk is the fresh, clean, lacteal secretion obtained by the complete milking of one or more healthy cows, properly fed and kept, excluding that obtained within eight days before and four days after calving, and contains not less than eight and one-half (8.5) per cent of solids not fat, and not less than three (3) per cent of milk fat.”

“Cream is that portion of milk, rich in milk fat, which rises to the surface of milk on standing, or is separated from it by centrifugal force, is fresh and clean, and contains not less than eighteen (18) per cent of milk fat.”

Experience among dairymen has convinced us that there exists among them a wide difference of opinion as to the necessity of furnishing to the creamery absolutely good and clean milk or cream for the purpose of buttermaking. This, I think, has been brought about in a large measure by the failure of the creamery managers or buttermakers to insist at all times that the patrons furnish them with good clean milk and cream. The patrons having been permitted to continue day after day delivering to a creamery milk or cream which had not been properly cared for, or was old and stale, or delivered in cans that were rusty, opened seamed or unclean, without objection being made has caused too many of them to believe that no matter how poor or unclean the milk or cream might be, it was good enough to be made into butter. This is not the case, as butter that will conform to the standard above quoted can not be manufactured from poor or unclean milk or cream. Let it be remembered that butter that will pass muster under the definition the legislature has put
upon it, and that will continue to bring the highest market price will of necessity have to be manufactured from milk and cream produced under the most healthful and sanitary conditions. Investigation goes to show that fully fifty per cent of the butter manufactured today will score below 90 points. Butter to score below 90 must have some decidedly old or unclean flavor or some bad defects in workmanship. This, to me, is an alarming condition and goes to show the extent of unclean and careless practices. Such conditions have caused the industry great loss, and it will suffer even greater losses unless discontinued. As I said before, I believe that the managers or butter makers are to a great extent responsible for the unclean practices among dairymen in the handling of milk and cream, and as such they are the most logical parties to bring about the reform so much needed. So long as the patrons' poor or unfit milk or cream is accepted at the creamery; as is too often the case, there is not much hope for improvement; but just as soon as there is no market for such milk or cream, will improvement be made. When we look at the great dairy industry from all sides, we should be most deeply concerned in the production of the best quality of milk and cream, that from it may be manufactured the best quality of butter, because we know such butter will bring the largest and best returns to the individual dairymen and to the state. Therefore, it is not my purpose to try to tell how to make the best butter out of a product not worthy of the name milk or cream, which has been produced possibly from sick cows, poorly fed and kept, milked in unclean utensils, under unclean and filthy conditions, because that can not be done. Such products are not recognized as milk or cream in the state law, nor should they be delivered to a creamery, to say nothing about a creameryman receiving and manufacturing them into an article of food. Of course such products, in which may be found all manner of unclean and unhealthful bacteria, may be given some special treatment such as pasteurization, etc., and in this way kill off some of the bacteria and render inactive others; but each will have done its work and left its bad influence, and the product made from it will never be as good as it would have been had the bad bacteria never found their way into it. I am convinced that too much time has been spent in an effort to discover methods whereby the best butter may be manufactured out of poor and unfit milk and cream, rather than to locate and remove the cause which renders the milk and cream poor and unfit. What I am trying to do is to point out certain fundamental principles in the production of milk and cream and in the manufacture of butter, which, if observed, will insure “extra” butter every time.

To begin with, the cows from which milk is furnished for butter making should be healthy. They should be kept clean and have plenty of good wholesome feed and water. When kept in barns, said barns should be kept clean, well-lighted and well-ventilated. A barn having four square feet of light for every cow and the King system of ventilation, or one square foot of air circulation area for every six cows is considered as having A, No. 1 light and ventilation. The milking should be done by clean milkers with dry hands and only clean, well-tinned milking utensils used. After milking, the milk should be promptly removed from the barn. To insure the removal of any unclean substance or of hair that may have fallen into the milk during the milking, it should be strained through several thicknesses of clean cloth and immediately cooled to 50 degrees F. or lower. Where the milk is separated at the farm it should not be cooled before separating, but should be removed at once to the separating room, which should be clean and free from foul and noxious odors, and carefully strained.
as above stated. After separation by a separator which had been
thoroughly washed and scalded after previous use, the cream should
be immediately cooled to 50 degrees F. or lower. Both milk and cream
should be held near that temperature as is possible in a clean place
free from foul and noxious odors until delivered to the creamery.
Deliver the milk and cream to the creamery fresh and clean and the
foundation for the manufacture of "extra" butter has been well laid.

The buttermaker at the creamery receiving the milk or cream pro-
duced in the manner above stated should be thoroughly competent in
the operation and care of the creamery and of all necessary up-to-date
creamery machinery and apparatus, with which he should be provided.
The creamery and all apparatus should at all times be kept in a
scrupulously clean and sanitary condition.

Where milk and hand separated cream is received at a creamery,
the cream from the milk and the hand separator cream can be mixed
with good results. Cream to give the best results in butter-making
should have a density of about 30 to 35 per cent of milk fat.

Lactic acid bacteria have the qualities of producing the fine deli-
cate flavor and aroma necessary in the production of the best butter.
Therefore, 15 to 20 per cent of good commercial lactic acid starter
should be added to the cream at the beginning of the ripening pro-
cess. To get the best results from the use of a starter it should con-
tain about .55 to .6 per cent acidity. As lactic acid develops most
rapidly at a temperature of about 65° to 70° F., it is necessary to
have the cream at that temperature during the time required for
ripening. To insure uniform ripening, the cream should be agitated
frequently until it has developed .45 to .5 per cent acidity. At this
point it should be immediately cooled to 48° or 50° F., but under
no circumstances should this be done by the direct introduction of
ice into the cream. The cream should be held at about this tem-
perature for about eight to ten hours or until the next morning so
as to thoroughly chill the fat globules which will insure a good firm-
bodied butter. It will be found that cream held as above stated will
contain about .55 to .6 per cent acidity which is about right for
churning. The acidity of the starter and of the cream can be de-
termined by the use of either the Mann's acid test or the Farrington
alkaline tablet test. When the cream is placed in the churn in the
condition above described, the churning should take about forty-five
to fifty minutes. This will insure an exhaustive churning and will
leave the butter in a condition in which it can be handled without
easily injuring the texture. The churn should be stopped when the
butter granules are about the size of wheat kernels, when they will
separate nicely from the buttermilk. If additional color is desired, a
harmless vegetable color should be added to the cream before starting
to churn. After the churning is completed and the buttermilk drawn
off, a sufficient amount of clean water of about the same temperature
as that of the buttermilk should be added to the butter and the churn
revolved five or ten times in fast gear. This water should be drawn
off and the operation repeated, if necessary, to insure a clear brine.
Sufficient moisture should be left in the butter to insure thorough
dissolving of the salt. According to market demands, dry salt rang-
ing from one-half to one and one-half ounces per pound should be
added at about the same temperature as that of the butter. During
the working of the butter, the churn should be run on the slow gear
and the working continued until the salt is evenly distributed and
thoroughly incorporated, which will prevent mottles. The butter is
now ready to be packed into tubs or printed. It should be firmly
packed in the packages in which it is placed upon the market and
the packages should be uniform, clean and neat in appearance. But-
INTERIOR—WEST DEPERE CREAMERY.
REPORTS OF CHEESE FACTORY, DAIRY AND FOOD INSPECTORS.

RICHLAND CENTER, Wis., July 15, 1908.

HON. J. Q. EMERY,
Dairy and Food Commissioner.

Sir: I herewith submit my report as Cheese Factory, Dairy and Food Inspector for the two years commencing July 1, 1906, and ending June 30, 1908.

During the time specified, I have been engaged in making inspections of cheese factories, creameries, city milk supplies, dairy barns, farm separators, dairy utensils and oleomargarine.

A portion of my time has been taken up with prosecution of cases for the violation of dairy laws, and in answering calls from numerous factories that have had various troubles, such as poor tests, poor cheese, bad drainage, pinholey curds, tainted milk, diseased cows, bad cans and dirty milk.

CHEESE FACTORIES.

My work in the cheese factories has covered territory in the eastern part of the state, where the cheese manufactured was of the foreign type and the milk was purchased by the 100 lbs.; also territory in the southwestern part of the state where nearly all of the milk is paid for by the Babcock test system.

The cheese factories in the eastern part of the state have undergone many improvements in the last two years. Cement floors have taken the place of old wood floors in making-rooms; cellar bottoms have been cemented, side walls cleaned and whitewashed, buildings repainted inside and out, drains repaired and put in sanitary condition, and in many instances, new drains have been put in. New boiler rooms have been built and boilers taken out of the making-
rooms, thus removing smoke and coal soot. Whey tanks have been taken out of the ground and either placed on the surface or elevated so that they can be readily cleaned; mud-holes and unsanitary pools around the factories have been filled in, screens put on doors and windows to keep out the flies and general conditions and surroundings greatly improved.

The system of buying milk by the 100 lbs., regardless of test, still in vogue in several of the eastern counties of the state, is erroneous in principle and leads to many abuses in practice. This has necessarily called for a large amount of testing of the milk at the factories and the finding of a good many cases of adulteration either by skimming or watering, followed by the prompt prosecution of the same. This system should be replaced by the Babcock test system, paying each patron according to the value of the milk delivered, thereby removing the incentive to deliver adulterated milk and awakening in said patrons a desire to improve the quality of the milk they furnish by keeping and breeding better cows. The system of working for quantity regardless of quality has led to the development of herds that, in some seasons of the year, will not produce milk containing 3% butter fat, a standard required by our state law.

The majority of the cheesemakers are keeping their factories cleaner and taking more interest in making a first class cheese, than they were before inspectors visited them. They are seeing that the farmers deliver cleaner and more wholesome milk to the factories and are working for a better and more marketable product than heretofore.

There are exceptions to this class which sometimes require us to use the severe measure of prosecution, but fortunately these cheesemakers are fast improving or going out of the business entirely.

Nevertheless it is quite essential that all factories be visited and reported at least once a year and at a time when the inspection is not expected by the maker. Many factories can be greatly improved by painting making-rooms, enlarging weigh rooms, providing cooler curing rooms, putting in new whey tanks and grading and filling in all low places around the factories.

In the southwestern part of the state, the factories manufacture mostly American types of cheese and the milk is paid for by the Babcock test system. In over one thousand samples of milk tested this season, I found but one case of watered milk, and it is not uncommon to find an average factory test of 4% butter fat per 100 lbs. when the cows are on full feed during the summer months. This is quite a contrast to counties in which I have worked where the test system is not used.

The factories in this part of the state are mostly in good condition and kept clean. There are a few exceptions where the drainage is not as good as it should be and the makers are sometimes careless, but the owners, upon notification, have usually been prompt in putting in new sewers and in many instances they have repaired the buildings and put in new vats and machinery.

The worst evil makers have to contend with is gassy and tainted milk, caused by cows wading in stagnant water, which is found in sloughs and pools in all of the many creek bottoms in this section of the state. The live bacilli, that are in the stagnant water, are carried in the dust on the cows to the milk pail, causing open pinholey curds that produce an inferior grade of cheese. This can be overcome only by the farmers employing more cleanly methods in milking. Much tainted milk is caused by the farmers depending too much on aeration and not cooling the night's milk sufficiently (to 70° or lower), thus allowing putrefaction to develop in the milk during the excessively hot nights which they have in these valleys.
These evils I have been trying to overcome as much as possible by talking with the farmers at the weigh room window of the best methods of caring for the nights’ milk and of the necessity of keeping the milk absolutely clean at all times.

Another source of much of the polluted milk has been the use of rusty, open-seamed cans. These we have had replaced with good new cans by tagging the old ones as unsanitary. There is still need of a large amount of inspection of milk at the factories and education of the farmers as to the necessity of keeping all milk and utensils perfectly clean, before we can get a first class cheese product during hot weather.

I have been called to several factories where the testing has been unsatisfactory and have usually found some of the essential requirements of good testing not complied with by the maker—as an illustration, using warm acid on warm samples of milk.

**CREAMERIES.**

The creameries in the southwestern part of the state are gradually becoming gathered cream plants and, owing to less labor and less running expense, they can pay higher prices for butter fat, but do not make as uniformly high grade product as the whole-milk creameries.

A large amount of this gathered cream is kept too long by the farmers before delivery and is sour and overripe when received at the factory. The action of large centralizing plants from outside of the state in purchasing from the farmers cream of any age they may ship them, has had a very demoralizing effect and has made it necessary for the local creamery, in many instances, to accept unsuitable cream for making fancy butter or else lose their customers.

The creameries are nearly all in first class condition and the buttermakers are working hard to keep them clean and make a marketable article from the raw material, such as it is. The buttermakers will have to insist on all cream being delivered sweet at the creamery and visit occasionally the source of supply before they will get a high grade, uniform article.

The enforcement of the production and delivery of first class gathered cream to our creameries and shipping stations is one of our most difficult problems for future work, as the hand separator is managed by so many thousands of patrons whose different degrees of knowledge about handling both machinery and cream, are “too numerous to mention.”

**BARN INSPECTION.**

My work of barn inspection the past winter was the first I had done to any extent, and was confined to dairies that were delivering milk to city and village trade in southwestern Wisconsin.

In a large majority of cases, I found the barns kept reasonably clean and with few exceptions the cows were clean, but the light and ventilation of the barns was poor and insufficient and many of them had poor floors and stanchions. A very small per cent of the cows had been tuberculin-tested and many of the herds were poorly fed owing to the scarcity and high price of feed. In nearly all cases feed and water were wholesome and of good quality. Utensils were, in most cases, clean and properly cared for.

There was but one city where I found adulterated milk, in which case I prosecuted three offenders. The milk averaged of high grade in both test and cleanliness in all other cities visited. Nearly all the dealers have adopted the plan of selling all milk in glass bottles,
which I consider the most desirable method of handling same. It insures cleaner and better sanitary conditions than the old way of dipping and measuring the milk from tin cans that became rusty, battered and open-seamed, and were in many cases unfit to contain food products for man.

The inspection of the dairymen's barns seemed to awaken an interest in many of them to improve their barns and surrounding conditions and I know of several that have whitewashed barns since inspection that never had been whitewashed before.

OLEOMARGARINE.

During the winter of 1906 and 1907 I was traveling from city to city inspecting the oleomargarine that was being sold by the retail trade. The oleomargarine business at that time was far from satisfactory. Dealers were urged by Chicago manufacturers to sell an article that, in the opinion of the Commissioner, was a violation of the state oleomargarine law. Not having at that time any Wisconsin court decisions on the subject, it was impossible to keep off of the market all goods that were deemed an imitation of yellow butter, but through the untiring efforts of the Commissioner and his assistants, we now have both Supreme and Circuit Court decisions that will make it an easier matter in the future to keep the market clear of oleomargarine that is in imitation of yellow butter.

From June 30, 1906, to July 1, 1908, I inspected about 250 cheese factories and creameries, and inspected the milk of about 1,500 patrons, inspected milk in 15 cities and made an inspection of the barns of the patrons furnishing milk to the same. I visited 500 grocery stores where oleomargarine was sold. I prosecuted 25 cases for sale of adulterated milk, 2 cheesemakers for unclean factories, 2 cases for selling or delivering unclean milk, and 3 cases for selling colored oleomargarine for creamery butter. I tagged over 100 cans as unsanitary and required 20 factories to improve their sanitary conditions.

RESULTS.

As far as I can learn, the work done has been of benefit to the makers, a large majority of the factory owners and patrons, and is considered of much value by the consuming public. The ever increasing number of calls I receive undoubtedly attests that the work is giving general satisfaction.

Very respectfully submitted,

F. E. CARSWELL,
Cheese Factory, Dairy and Food Inspector.
Hon. J. Q. Emery,
Dairy and Food Commissioner.

Sir: Following is a report of the work done by me as cheese factory, dairy and food inspector for the biennial term ending June 30th, 1908:

Number cheese factory inspections........................................ 287
Number creamery inspections............................................. 81
Number skimming station inspections.................................... 9
Number city milk plant inspections..................................... 28
Number city milk wagon with utensil inspections....................... 361
Number samples city milk purchased and tested........................ 190
Number farm separator dairies inspected................................ 70
Number dairy barns inspected............................................ 815
Number patrons' milk cans inspected.................................... 5,815
Number meetings called and addressed................................... 42
Number conventions addressed.......................................... 4
Number city councils addressed.......................................... 4
Number farm institutes addressed..................................... 30

During the two years covered by this report, progress has been made in my territory in all the features of the dairy industry, the most striking improvements being noticeable in dairy barns with especial reference to floors, ventilation and lighting. However, the proportion of cows that are filthy during winter months is, as yet, very large.

Improvement in the character and cleanliness of milk cans used for delivering milk to cheese factories and creameries is noticeable in sections where milk inspectors were made, especially where factory managers have the backbone to insist that the advice of the inspector be lived up to.

Unfortunately there are factorymen who are ready to accept anything a patron has to offer, no matter how dirty the milk or how unfit the can. For instance, one cheesemaker, in my presence one morning rejected thirty cans of milk because of unclean cans, the rejected milk constituting forty per cent of the total offerings. Yet the milk was not any dirtier than usual and it had always been accepted as satisfactory and put into the same vat with the clean milk delivered by other patrons and made into food for people to eat.

Instead of protecting those farmers who took pains to get their milk to the factory in a clean condition, this cheesemaker abused them by mixing dirty milk with it at the factory, thereby also trampling on the rights of the consumer. In carrying on said practice, he violated the law daily.

I do not know by what system of mismanagement factorymen could place themselves in a more contemptible position than that of the aforesaid cheesemaker, and while such practices can still be found, they are growing less common.

In cheese factories and creameries improvements have been going on steadily especially with regard to drainage and surroundings. Yet I regret to report that it has not been difficult to find creamerymen who pumped the farmers' clean milk through filthy pipes and the skim-milk through another set of filthy pipes.

I am compelled to report that I found numerous cheese factories in an abominably dirty condition, this fact necessitating a large number of prosecutions.

There are men engaged in operating cheese factories and creameries who have missed their calling, being too untidy and slovenly,
and it is unfortunate that the state has made no provisions for compelling such men to change their occupation.

I have done considerable work along the line of inspecting city milk supplies and find that much recklessness prevails among milk dealers where they have been given a loose rein. Experience compels me to believe that without inspections and prosecutions unclean utensils could be found daily on fully sixty per cent of the milk wagons, due in part to the use of defective cans.

At a few cities where several inspections have been made it is now difficult to find unclean cans.

Wherever inspection has been extended to the farms where milk is produced for the city trade, great improvements have been made in the dairy barns and cows are being kept cleaner.

THE CITY MILK SUPPLY AND ITS REGULATION.

The trend of the times is to regulate traffic in food products with reference to purity and wholesomeness.

Many foods are used only after being cooked, whereas milk is used largely uncooked and it forms an important part in the daily diet of infants.

Impurities, aside from being offensive in foods, may create poison in milk, and as infants and young children cannot stand much poison in their systems it appears that the necessity of purity in our city milk supply needs no argument.

An Eastern authority says "The Lord's will be done" has been piously repeated over a deceased infant in scores of bereaved households when the draining of a stagnant pool, the removal of filth about the dairy or the application of a low temperature to milk would have allowed the child to grow to maturity."

Dr. Whalen, formerly Health Commissioner of the city of Chicago, in a circular of information on the milk supply of said city, says: "Every one knows how milk looks and how it tastes and that it comes from cows or other domesticated animals and yet very few really know what milk is or how it is made by animals or how dangerous it can be when it gets dirty.

"In spite of the value of milk as an article of diet, many persons on account of their knowledge of the careless way that most milk is produced use as little of it as possible.

"Milk differs from most foods in that its quality cannot be judged by its appearance. The detection of adulteration and contamination is quite impossible in the kitchen. Milk containing bacteria dangerous from their number and variety does not differ in appearance from the pure article."

During the past two years I have spent considerable time inspecting city milks and the dairies supplying the same and among the rather common criticisms I have had to report with reference to stable conditions are: Dark, foul-smelling stables; rotten, saturated plank floors; floors that leak and hide a mass of filth underneath; and filthy cows.

With reference to milk dealers' premises, the following conditions, among others, have been found: musty floors; musty odor; room swarming with flies; employees or operators making a practice of spitting tobacco juice on floors; cigar stubs lying around and premises untidy generally. I have also found premises into which sewer gas came through defective drains.

In those cities where there has been little or no inspection one can find unclean cans on fully sixty per cent of the milk wagons, due in part to carelessness in washing, but often to the use of unsuitable
I found strainers that did not strain; cooling tanks that were foul; etc.

I have seen milk sold in bottles that had blotches of milk solids fastened on the glass. I have seen milk cans, from which milk was being sold, that were so filthy that when they were emptied and covered for a few minutes they would stink. I have seen churns and other utensils in milk dealers' premises from which one could scrape off putrid stuff by the ounce.

I have seen milk vendors feed their cows on mouldy or rotten feeds. I found one vendor whose cows were obliged to drink leechings from a filthy barn yard; another vendor used horse manure from a livery barn exclusively as bedding for his cows. I have seen milk vendors collect unclean bottles from some customer, refill them with milk on the delivery wagon and deliver the said bottles of milk to other customers. I know one farmer who offered a can full of cream and maggots to a milk dealer and he made a great "holler" because the dealer refused to accept it. I know of epidemics of typhoid and of scarlet fever that were caused by the distribution of milk from farms where those diseases were prevalent.

In a Wisconsin city, two months ago, within two hours after their milk man had left the usual supply of milk and cream at their house, the husband, wife and two children were under the care of a physician. It was a clear case of ptomaine poisoning caused by the milk or cream.

A month ago thirty-six tuberculous cows were found on two farms that were supplying milk to the city of Oshkosh. The tuberculous cows that supply milk to most of our cities have not yet been weeded out.

In order to cover up the effects of carelessness many of our biggest dealers resort to pasteurization, using all milks that will "stand up" through said process. That raises the question as to whether the bacteria shall be consumed alive or dead, and whether the human stomach shall constitute an aquarium or a cemetery. I inquired of one dealer what he meant by "stand up". He answered "any milk that is not too sour, no matter if it is dirty."

Quoting again from Dr. Whalen: "When milk is once spoiled, it can by no known process be made good milk. Pasteurization is merely a method for its preservation and its necessity proves a contamination which might have been avoided. Pasteurization is not an ideal method of dealing with the present day milk and is resorted to as a necessary evil, and nothing more.

"The ideal pure milk supply would be to have milk uncooked, free from disease germs and dirt, and undrugged with chemical preservatives. These conditions involve clean, healthy cows, grass-fed in summer and properly fed in winter; sanitary buildings; clean milking; prompt and thorough cooling and distribution in sealed bottles or cans."

We have state laws which forbid the abuses above mentioned but the force of inspectors is too small to properly cover the ground, aside from their other duties, and if they could cover is—they could not secure safe protection to the consumers without assistance from the municipality.

The public may presume that if a penalty is provided for the sale of milk which ought not to be sold and inspectors are on hand to prosecute offenders, that proper regulation will result. Such conclusion, however, may be erroneous and I will cite several instances to show why.

One vendor whose utensils were repeatedly found to be unclean was finally prosecuted, after which, on several inspections, blotches of put-
rid matter were found on the inside of his cans, yet he persistently declared the cans were properly washed and were clean.

Another vendor after the third warning was prosecuted. Two weeks later liberal patches of a putrid coating were found in his cans. This man washed the cans personally yet he was ignorant of their condition, until we called his attention thereto.

In these cases enforcement of the law brought no regulation.

Milk can be so impure as to be dangerous to use, yet no evidence may be obtainable that would justify prosecution.

The untidy person may make some changes merely with a view of escaping prosecution, which simply means that he will be as dirty as he dares be; therefore, in my opinion, his milk would not be safe to use as a food product.

In the production and vending of pure milk, intelligence and tidiness are a necessity. Some people don’t possess these requisites. We cannot legislate intelligence into them, neither can the inspector scare ignorance out of them and so long as such people have a hand in supplying cities with milk, adequate protection to consumers will be almost impossible.

It must not be supposed that the ignorant furnish all the low grade milk used in cities. Far from it. Some of it is furnished by intelligent men, who have become indifferent or perhaps even reckless, because the consuming public is indifferent and does not appreciate cleanliness in milk.

As a matter of fact some producers who deliver milk direct to the consumers have attempted to put a superior article on the market. This entailed a slight increase in expenditures and, as a compensation, they asked the modest advance of one cent per quart over the ruling (usually the lowest) price and in nearly all cases were turned down by the consumers.

I have interviewed retailers who were buying their milk supply from farmers and found that most of these were buying and using milk in their business which was unsatisfactory but they could not get anything better for the price the market allowed them to pay and the situation, in this respect, became more acute on account of the prevailing high prices for cheese and butter, which furnished an inducement to farmers to sell their milk at factories.

Dr. Whalen says: “The public will not pay a fraction of a cent more per quart for that milk produced under sanitary conditions than that from the foulest surroundings.

“If the public is indifferent and cannot be educated, what will be the attitude of the producer toward an education from which he can see no direct benefit, but only increased trouble and expense. Can we expect him to employ extra help in order to secure perfect cleanliness; to improve the ventilation and drainage of his barn; to remove the manure daily to a place apart from the barn; to sterilize the pails; to use ice for rapid cooling; and to take other precautions merely to send a clean milk to the market for which neither the middleman nor the consumer will pay a cent more per can than his slovenly neighbor receives?

“The question can be simplified by the elimination of the public, which does not care and must be saved in spite of itself. We therefore have to deal with the producer beyond the city and the retailer or vendor within. Licensing of dealers has done much good.

“Revoking licenses on the ground of unsanitary conditions is a wholesome practice which educates by example.”

Here we have the key to the situation. Here is where the municipality should take a hand by licensing every person who sells milk within its borders. The license fee should be very small, or may, per-
haps, be omitted but a penalty should be provided for selling without such license.

People will differ as to the regulations a city should prescribe. My opinion is that the ordinance should require with respect to cows, stables, milk premises, utensils and dairy products, all that our state dairy laws require; also that stables be whitewashed at stated intervals; that cows be kept clean; that cows be tuberculin-tested; that milk utensils be sterilized daily; that milk shall be promptly cooled when drawn from the cows and shall not be delivered above a given temperature (50 or 55 degrees) to city dealers nor offered for sale within the city. The ordinance should also cover such cases where milk producers or dealers are blamable for the spread of contagious diseases through the milk supply.

All producers and dealers should be supplied with copies of the state laws and of the city ordinance bearing on this question and should be given a reasonable length of time to prepare for a compliance with said regulations.

After the ordinance is in effect, an offender should be given notice as to the nature of his shortcomings, and if he offends after a second notice his license should be promptly revoked.

The producer outside the city can be controlled through the dealer within, in this way: If the producer's stable, cows or milk falls short of the requirements, the retailer is forbidden to use his milk, under pain of having his license revoked.

The local commissioner of health should have charge of the enforcement of the ordinance and much depends on his fidelity to this trust. He may make inspections in person, or he may be given the services, as he needs them, of a man who is competent. The inspector should be young enough to have good eye-sight.

The city of Marinette has used some method of control and its milk supply is far superior, in point of purity, to the average.

The enforcement of these measures at Marinette involved no hardships or undue expenditures to milk producers, the necessary improvements consisting only of such things which every cow owner should have and would be benefited by, whether his milk goes to the city or elsewhere, and, incidentally, it furnished the conscientious producer the protection he reserved against competition from his slovenly, reckless neighbor. However, I deem it but fair to state that by comparing the present cost of milk production with the retail price, and by considering the high value of milk for cheese and butter purposes, we need not expect material improvement in the purity of our city milk supply without some advance in the price, which the public should cheerfully pay, because clean milk will be inexpensive food at that.

What the public ought to know:

That milk is not clean unless some pains have been taken to prevent it from getting dirty.

That dirty milk may be the direct cause of disease and death.

That there is a direct relation between the cleanliness of the cow and the cleanliness of the milk.

That there is a direct relation between the odor in the stable and the purity of the milk.

That disease germs multiply rapidly in milk and that infected milk may spread contagious disease.

That milk once impure, cannot be made pure.

That pasteurization tends to preserve, rather than purify, milk.

That in practically all dairy sections tuberculosis exists in some herds.
That this disease may be transmitted from the cow to the human
being.
That a milk producer from the standpoint of economy cannot afford
to keep tuberculous cattle.
That a milk producer should be prepared to furnish his customer
with proof that his herd is free from this disease.
That some milk cans, from their style of construction, are almost
impossible to clean, therefore unfit to use.
That some people are so untidy, or ignorant, that they ought not
to be permitted to produce or handle milk intended for direct con-
sumption.
That in the absence of properly enforced measures, there will be
more or less milk marketed that is a menace to health.
That prosecution is expensive, uncertain of desired results and if
relied upon entirely, is bound to fail in securing sufficient protection
to the public.
That furnishing the public with milk which is clean, uncontam-
inated and properly cooled involves no hardships on the producer or
the dealer.
That those who furnish such milk should by a system of licensing
be protected from competition by dirty or reckless people.
That dirty milk is dear at any price.
That clean milk even at an advanced price, will be inexpensive in
comparison with other foods.
That the dairyman who has a sanitary barn, properly ventilated and
free from objectionable odors, and who keeps his cows clean is a
public benefactor and deserves ten times the appreciation accorded him
by the consumer.

E. L. Aderhold,
Cheese Factory, Dairy and Food Inspector.


Hon. J. Q. Emery,
Dairy and Food Commissioner,

Sir: I herewith submit my report of the work performed by me
as cheese factory, dairy and food inspector, beginning July 1, 1906
and ending June 30, 1908.

During that time I inspected as follows:
354 cheese factories, creameries and skimming stations,
73 cream separators used by farmers,
350 dairy barns,
30 milk depots in different cities,
104 oleomargarine sellers.

I made 785 fat tests; 376 cream tests; collected 205 city milk samples
and tested same; also collected 18 herd samples and expressed same
to state chemist, Madison; inspected the milk wagons and their uten-
sils of 28 different cities; judged 900 cheeses at Madison, State Fair
Park, Milwaukee, and at cheesemakers' conventions, Milwaukee; and
made 32 prosecutions.

The inspection of these two years differed somewhat from the inspec-
tion of the preceding years in that it was more thorough. During
the first years as cheese factory, dairy and food inspector, my
duty was especially to visit the cheese factories and creameries and
give the necessary advice, and acquaint the cheesemakers and cream-
ery men with the dairy laws and the penalties for not obeying the
same. My later inspection consisted in visiting the cheese factories and creameries in order to ascertain if they were conducted according to the dairy laws, and in seven cases I was compelled to start prosecution against parties for maintaining unclean and unsanitary cheese factories.

Will say that in general great improvements have been made in cheese factories and creameries in my territory since my first visits. In most all cases where new floors were put in, cement was the material used. Factories were painted and whitewashed inside. Basement curing rooms were cleaned and a coat of whitewash applied which added greatly to their appearance, and the drainage was also improved. When inspecting creameries and cheese factories, I also inspected patrons' milk cans. Where a can was found rusty, unclean, open-seamed, and badly battered, we attached a tag to same, stating that it was unfit for use. This tag has printed on it the dairy laws and the penalty for delivering milk in such cans. It has also printed on it the instructions for the care of milk. Have come in contact in several cases with cans which have been used for delivering milk from fifteen to twenty years, and in a few cases have found cans that were completely covered with rust. In some cases prosecution was brought against parties where cans were found very unclean.

**INSPECTION OF HAND SEPARATORS.**

In the inspection of cream separators, I found them in all sorts of conditions. About one-half of the number I inspected were located in barns. In some cases they were situated in the midst of the herd, and in such cases the separators were found very unclean. When such conditions existed, I always advised the immediate removal of separator to some clean place. In some other cases I found separators located in dwelling houses which were also found very unclean. When unclean separators were found, I advised parties not to offer any more cream for sale until they could comply with the dairy laws.

**INSPECTION OF DAIRY BARNS.**

In the inspection of dairy barns, I found about one-third the number inspected to be in poor condition. They were poorly lighted and poorly ventilated and had earth floors. The cows were tied with ropes and chains and allowed to become very filthy. In these cases I always advised the putting in of cement floors and constructing the same so as to keep the cows clean.

**INSPECTION OF MILK DEPOTS IN CITIES.**

In the inspection of city milk depots, I found a few cases where conditions were very unclean. Cream separators and utensils were coated with putrid milk; also found the apparatus used for making hand cheese very unclean. In those cases it was necessary to prosecute in order that conditions might be changed.

The city milk wagons were inspected along the same line and prosecutions were brought where utensils used were found unclean. Samples of milk and cream were collected from all city milk dealers. These samples were tested for milk fat and solids not fat and in eleven cases the milk was found to be adulterated. Those cases were prosecuted.
MILK AND CREAM TESTING IN CHEESE FACTORIES AND CREAMERIES.

This work was brought about by special requests sent to Commissioner Emery from operators and patrons of cheese factories and creameries to have an official test made of their milk and cream. These requests were usually made where dissatisfaction existed between operators and patrons. I found, when attending those special calls, that dissatisfaction often arose through carelessness or lack of knowledge of the operator in preparing samples for testing, and, on the other hand, the fault sometimes was with patrons expecting a higher test than they deserved.

OLEOMARGARINE.

My work during the beginning of the year 1908 was devoted to the visiting of one hundred and four oleomargarine dealers in different parts of the state. This was for the purpose of ascertaining whether the dealers were complying with the law in regard to the sale of oleomargarine. In some cases I found dealers who were selling oleomargarine which was slightly colored in imitation of yellow butter, and also in some cases the dealers failed to have their places properly placarded as the law required. In those cases the law was carefully explained to the dealers, and in each case they willingly promised to discontinue the sale of the unlawful goods and return same to the manufacturer.

Respectfully submitted,

J. D. Cannon,
Cheese Factory, Dairy and Food Inspector.

MONROE, Wis., July 15, 1908.

Hon. J. Q. Emery,
Dairy and Food Commissioner.

Sir: In compliance with your request, I herewith submit my report as cheese factory, dairy and food inspector for the period from July 1, 1908, to June 30, 1908.

I have made inspections as follows:
402 cheese factories,
23 creameries,
46 dairy barns and herds,
10 city milk supplies,
2 condensing factories,
2 skimming stations,

making a total of 485 inspections.

While engaged in the work of inspecting cheese factories and city milk supplies, I collected and tested by means of the Babcock test, the lactometer and the Wisconsin curd tests, 1151 samples of milk and cream. Of these 1151 samples, I delivered to the state chemist for analysis 70 samples of milk and cream. In addition, 14 samples of lemon and vanilla extracts and spices were sent by me to the chemist for analysis.

To clear up suspected adulterated milk delivered to cheese factories or creameries or furnished by city milk dealers, I procured about twenty-five samples of milk at the barns of the corresponding herds.
The inspection of cheese factories and creameries had mostly to do with the sanitary conditions existing in the process of the manufacture of cheese and butter, the utensils of the patrons in which the milk was delivered to the cheese factory or creamery, and sanitary conditions surrounding such premises.

The inspection of city milk supplies was chiefly to ascertain the quality and purity of the milk and cream delivered. The Babcock test and lactometer tests were applied to determine the per cent of milk fat and solids not fat in the milk. The Wisconsin curd test was applied to determine the purity and cleanliness of the milk, and when in either case the milk was found to be abnormal in milk fat or solids not fat, or apparently produced under unclean conditions, a barn inspection was made. The suspected sample of milk or cream was sent under seal to the state chemist for analysis and when found below legal standard, a barn inspection of said herd was made to ascertain if the milk at the barn, drawn from the cows in the presence of the inspector, was also below legal standard. If not, prosecution was made.

I preferred seventeen charges and secured fifteen convictions—fourteen against parties selling adulterated milk, one against a party selling unlawful lemon extract, one against a party for conducting an unclean and unsanitary cheese factory.

In a number of cases where samples from different patrons’ milk were found at the factory below legal standard in milk fat, also below standard in solids not fat, corresponding samples were procured at the barn of these herds and were found to be actually below standard in milk fat and also below standard in solids not fat. In such cases it was apparent that much effort was put forth by the owner of said herd to increase the quantity of milk regardless of quality. The state of Wisconsin has provided standards for milk, and it should, therefore, be a matter to be thoughtfully considered by the producers and sellers of such milk.

The system known as the “pooling system” is still in vogue and is largely responsible for the numerous complaints of adulteration that are made to the commissioner. By the “pooling system” it is meant the buying of milk by the hundred pounds, irrespective of the quality. The cheesemakers are yet to a large extent without milk testing apparatus or even a knowledge of these appliances.

I also inspected over a hundred milk and cream cans at different depots in which milk and cream are transported or shipped to either creameries or ice cream manufacturing plants. In case dirty, rusty, battered or open-seamed cans were found, suitable action was taken in each case.

In the month of February, 1908, I was engaged in taking a cow census of forty herds in the county of Green. The purpose of this cow census was an educational one, showing the possibilities of profitable and unprofitable dairying. The results were reported at the 36th annual convention of the Wisconsin Dairymen’s Association, which was held at Monroe, March 11 to 13, 1908. Among other important facts, it was shown that the difference of net average gain per cow of the lowest and highest herds per year varied from $6.33 to $55.94 per cow, or a total return from factory:

<table>
<thead>
<tr>
<th>Highest</th>
<th>Lowest</th>
</tr>
</thead>
<tbody>
<tr>
<td>$91.49</td>
<td>$31.12</td>
</tr>
</tbody>
</table>

| Deducting cost of feed | $55.94 | $6.33 |
|------------------------|--------|
| 35.55                  | 24.79  |

The calf is not credited to the cow in either of the above specified herds.
IMPROVEMENTS.

Milk producers have greatly improved in the use of more suitable utensils for both milking and delivering milk to cheese factories. They are becoming aware that the sale of unclean milk and the use of unclean utensils are punishable offenses.

Cheese factories have been much improved, especially in the construction of cement floors and drainage.

Improvements have been made by the installation of separators for the manufacturing of whey butter, thus doing away with the old gravity system of raising cream in tanks, sometimes called the "fly system".

Whey barrels that were used for the purpose of assuring each patron his share of whey are rapidly being replaced by a check pump and large tanks. This greatly improves the sanitary conditions of a cheese factory.

Cheese factory operators find it less difficult to keep their factories and premises in clean condition since good cement floors and good drainage have been provided. Then, a remarkable improvement is noticed in the atmosphere surrounding the cheese factory. The utensils, as a rule, are found in a clean condition. There is occasionally one who does not seem to believe in cleanliness, but, as reported, such cases have been prosecuted and convicted.

MORE IMPROVEMENTS AND PRECAUTIONS NEEDED.

Whey barrels that are still used for the purpose of distributing whey at the cheese factories should be done away with. Many of the disturbances in the manufacture of cheese have been found to be directly due to the use of unclean whey barrels.

A properly equipped milk house should be found on every dairy farm. It is as essential as a dairy barn. It is only too frequent that we find milk housed in the cow stable during winter time. Milk cans are too often found stored away for the day as well as night on a stand joining the cow stables, or in immediate proximity.

Every cheese factory in this section of the state should be equipped with a Babcock milk tester, a lactometer and the Wisconsin curd test. Every cheesemaker should be compelled to possess practical knowledge of this milk testing apparatus. The application of these tests would much reduce the temptation to adulterate.

Many improvements are still needed in the proper construction of a Swiss cheese factory. Cheese curing rooms are not what they should be. In many cases they consist only of one room. Better cheese curing rooms should be provided. To control the fermentation processes of a Swiss cheese, three curing rooms should be provided—one room for the salt brine tank and young salt cheese, a second fermentation room with controllable temperature, and, third, a storage room of somewhat lower temperature. This would be greatly appreciated by the skillful Swiss cheesemaker. Whereas in the present construction of a Swiss cheese factory of only one room, or perhaps two, for curing purposes, the cheesemaker and the cheese are at the mercy of the surrounding temperature. For under ordinary conditions, the fermentation of a Swiss cheese varies greatly and can only be controlled when placed under different temperatures.

As to some of the peculiar ideas held to and methods used by the Swiss cheesemaker, such as not straining the milk, he should not be condemned outright for his convictions. The object of not straining the milk at the barn is to necessitate the production of the milk so
clean that no dirt of any kind can be detected by the cheesemaker, or any other substances that may be traceable toudder diseases. It is simply meant to enforce clean milking, which rule is strictly enforced by each cheesemaker in Switzerland who has proper control of his patrons and whose orders are carried out with fidelity. Had the old method of not straining milk at the barn, which has also been introduced in this country by the Swiss cheesemaker been enforced as strictly as in the old country, it would certainly have compelled cleaner milking.

But our cheesemakers have not attained such a high plane as their fellow cheesemakers are enjoying in the old country. There they are looked upon as their patron's leading star. Only too often do we find them here considered as a "mere hireling" by their patrons, who willingly adopt their "orders" not to strain the milk, and when once our makers find the heart to call the patrons' attention to unclean milk, they shield themselves behind the "orders", saying that they were told not to strain the milk. Consequently the evil has been introduced and the maker has seemingly lost his prestige. But this trouble may be overcome through rigid state inspection.

Respectfully submitted,

F. Marty.

Cheese Factory, Dairy and Food Inspector.

REPORTS OF CREAMERY, DAIRY AND FOOD INSPECTORS.

Eau Claire, July 15th, 1908.

The Honorable J. Q. Emery.

Dairy and Food Commissioner for Wisconsin.

Sir: In compliance with your request, I herewith submit a report of my work as creamery, dairy, and food inspector, from July 1, 1906 to June 30, 1908, inclusive.

During this period I have inspected six hundred fifty-nine creameries and cheese factories, one hundred fifty dairy farms furnishing milk or cream to creameries, and forty-nine dairy farms furnishing milk or cream for household use in cities or towns. I have also, together with Mr. P. A. Larson, inspected the milk supply of the cities of La Crosse and Eau Claire. I have tested a large number of samples of milk or cream, a number of samples of butter, and have attended a number of farmers' meetings at which I spoke on dairy topics. Since May, 1907, I have also served as one of the judges in the monthly butter scorings conducted at the Dairy School, University of Wisconsin, and have there, up to the time covered by this report, scored sixteen hundred and seventy-nine samples of butter.

The conditions of the creameries and cheese factories inspected, were in many instances satisfactory, while in other instances they were found to be lacking in cleanliness. Whenever these latter conditions were found, they were remedied, generally without recourse to law. If one will contrast the conditions of the factories today with the conditions existing in them a few years ago, it will be apparent, I think, that substantial progress has been made. Some of the worst factories—those of unsanitary construction—have been repaired and
put in good condition. Formerly, it was not uncommon to find the Babcock tester placed on a weak, shaky foundation; the glassware unclean and inaccurate; the balance used for weighing the test samples of the cream, unclean, rusty, and lacking in sensitiveness; the floors defective and unsanitary; and the surroundings of the factory disagreeable. Today, nearly all the creameries have placed their Babcock tester on a firm foundation; have procured accurate and sensitive cream balances; have sound floors; and have, at least, reasonably clean surroundings.

Among the factories, strong competition with one another for patronage exists, which together with a total absence of any classification, or even pretence of classification, of the raw material is a barrier to improvement in the quality of it. This cannot, in my opinion, be overcome until the finished products are more properly classified in the markets than is now the case, and the price obtainable for first class products are in proportion to the cost of producing them as compared with the cost of producing second or third class products.

The conditions on the farms furnishing cream to the factories were in many instances far from being satisfactory. Few farms had proper facilities for caring for the cream while it remained in their possession. And many people habitually used unclean separators. The conditions on the farms furnishing milk or cream for household use in cities or towns, were on the whole better than the conditions on the farms that dispose of their products to the creameries. Yet on many of these farms primitive methods also prevailed.

Besides the things already mentioned as influencing the further progress of the dairy industry in Wisconsin, there are many others, but I shall mention only a few: It is apparent that in many instances there is needed realization of and awakening to the fact that dairy products are human food; that milk and cream become tainted whenever exposed to foreign odors; that milk and cream are highly perishable products when left at warm temperatures; that cream several days or a week old is no longer fresh cream; and that the dairy farmer is more vitally interested in having dairy products produced of a high quality than any other person, for he, in the final analysis, is the chief gainer or loser as the case may be.

Respectfully submitted,

THOMAS CORNELIUSON,
Creamery, Dairy and Food Inspector.

ONALASKA, July 15, 1908.

Hon. J. Q. Emery,
Dairy and Food Commissioner.

Sir: Complying with your request, I submit this report of work done by me for the biennial period ending June 30, 1908.

My work during that period has been to inspect creameries, cheese factories, city milk supplies and dairies. It is my practice to be at the creameries and cheese factories when the milk and cream are being received and to inspect the same as received. At some creameries, however, haulers are employed to weigh and sample the cream on the premises of the patron. The cream is then put into twenty or thirty gallon cans and taken to the creamery. In some cases I have found it necessary to accompany the hauler on his cream gathering trip. This has proven to be profitable work, for while at such patrons' homes, not only would the cream be looked after, but the place
where it was kept and the utensils such as the separator, cans and
pails would be inspected and instructions given as to how to care for
them and for the cream so as to get the best results.
During the winter of 1907–8 considerable time was spent inspecting
city milk supplies. The milk on the wagons was not only looked after,
but the sources of supply were ascertained and an inspection was made
of the dairies where the milk was produced. Most of these dairies
were found in a fairly good condition, but a few were found where
the barns were unclean, dark and damp and the cows dirty. These
producers were given instructions to clean up and get their barns into
sanitary condition. These instructions were usually agreed to and
followed, although a few preferred to quit business rather than comply
with the law. Some stated they were too old to reform. The public
was probably better served by their quitting business.
Two years ago a number of creameries and cheese factories had
poor drainage, some also had poor buildings. In such cases new
buildings have been put up or repairs made to old ones, cement floors
have replaced the old, wooden ones, suitable drainage has been sup-
plied and in a few instances factories have been moved in order to
get proper drainage.
The milk and cream received at the factories are generally improv-
ing in quality, although a large field is still open for improvement
along this line, as with the introduction of the farm separator the
shipping of cream has been made possible. As some centralizers
seem not to be particular as to what kind of cream they get, it has
made it more difficult for the local creameryman to be critical. This,
with the placing of farm separators in barns and other unsuitable
places and neglecting to properly clean the separators, is the worst
problem the creameries have to meet at the present.
I have inspected:
535 creameries, cheese factories and skimming stations.
13 city milk supplies.
333 dairies.
I have prosecuted 22 cases as follows:
For selling adulterated cream and milk............. 14
For selling or delivering unclean milk and cream.... 5
For maintaining unclean creameries and skimming
stations ...................................................... 3
Respectfully submitted,
P. A. LARSON,
Creamery, Dairy and Food Inspector.

HEDRON, WIS., JULY 15, 1908.

HON. J. Q. EMERY.
Dairy and Food Commissioner.

Sir: In compliance with your request, I herewith submit my re-
port as creamery, dairy and food inspector, for the period July 1,
1906 to June 30, 1908.
I have been engaged in creamery, dairy, cheese factory, barn and
city milk inspection, besides making a number of second inspections
with Inspector Wm. McAdam. Assistant Commissioner Larson and
myself have also made a number of second inspections in my territory.
These inspections were in cases where on my first visit I found the
factory in an unsanitary condition and resulted in the conviction of
three operators and the closing for repairs of two creameries.
During part of this period I have been engaged in city milk inspection; have taken samples in all the towns and cities in my territory and have worked with Assistant Commissioner Baer in the sampling of city milks. The samples were bought of the dealer, a determination of fat being made, lactometer readings taken and Wisconsin curd test made. During part of last winter and during the early spring the work of barn inspection was carried on. This work consisted of a thorough inspection of the barn as to light, ventilation, cleanliness, location of separator, care of cream, etc. This work was done in conjunction with city milk sampling.

I have also done considerable work on cream routes, visiting the farm with the cream hauler for the purposes of inspecting the premises as to cleanliness of the cows, care of separator and method of caring for the cream. As the hand separator is coming into more general use, this phase of the work will require a good share of the inspector's time in the future. In this work we were very cordially received by the farmers, most of them being anxious to improve their methods where shown to be wrong. I have noted a marked improvement on visiting the second time.

In my work among the creameries, I have noticed a decided improvement as to cleanliness, better sanitary methods being in use. New cement floors are taking the place of the wooden floors. Galvanized iron tanks for skim milk and buttermilk are in general use. Improved machinery is being installed and more competent buttermakers and cheesemakers are being employed. In a few factories they are still using the 50% test bottles. These should be done away with as they are very unreliable.

Following is the number of creameries, cheese factories and skim stations visited, number of convictions, number of samples of milk tested, number of cream patrons visited, barns inspected, etc.:

- 374 creameries and cheese factories inspected.
- 100 barns inspected.
- 200 cream patrons visited.
- 2,619 samples of milk tested.
- 14 town and city milk supplies inspected.
- 3 convictions for unsanitary methods.
- 15 convictions for adulteration.

Respectfully submitted,

JAMES VAN DUSER,

Creamery, Dairy and Food Inspector.
REPORTS OF FOOD INSPECTORS.

CHIPEWA FALLS, JULY 15, 1908.

HON. J. Q. EMERY,
Dairy and Food Commissioner,
Madison, Wisconsin.

SIR: I have the honor to herewith submit this, my biennial report as Chief Food Inspector in the Dairy and Food Commission, from July 1, 1906 to June 30, 1908, of work done during this period.

I would respectfully state that in a general way I have devoted my time to the inspection of grocery stores, drug stores, meat markets and places where food products were sold in the north half and central part of the state.

In pursuing this work, I have collected several hundred samples of foods, drugs and beverages and forwarded to the state chemist for analysis. There have been many requests from jobbers, retail dealers and others, requiring special work that has taken much time and attention. The investigation of such complaints has brought forth good results.

During the period from January 22 to February 24 of this year I was given special work inspecting oleomargarine, with instructions to call on all dealers selling this product in the following counties: Barron, Bayfield, Chippewa, Clark, Douglas, Dunn, Eau Claire, Iron, Price, Pierce, Polk, Sawyer, St. Croix, Trempealeau and Washburn, making daily reports of such inspection to your office; also collecting and forwarding to the state chemist many samples for analysis. The results of this work proved quite satisfactory and of much benefit to the cause.

PROSECUTIONS.

I am pleased to report that I have not had as many prosecutions during this period as in my former biennial report to you, and as the work progresses it is to be hoped the number of prosecutions for the violation of our food laws will continue to decrease.

WORK ACCOMPLISHED.

A great deal has been accomplished in the last two years in bettering the conditions in the markets of the state as well as in the quality of the food products sold. There has been a cleaning up of old goods by the jobbing houses, retail dealers, grocery and drug houses, brought about by the passage of the national food laws and the constant and effective work of the state food department, bringing about a better condition in the food supply.

SANITARY CONDITIONS.

I am pleased to note some improvement in the sanitary conditions of grocery stores and meat markets. There are, however, many dirty, ill-kept grocery stores and markets in the state. The total disregard of cleanliness displayed by some dealers is to be deplored. It seems to me that there should be some effective legislation along these lines. It is also to be hoped that, and I predict the day will soon come when, all open package goods and all receptacles containing foods, fruits and
vegetables will cease to be, as now, displayed outside of groceries and markets, exposed to filth and dirt from streets and walks. This can be accomplished if the consumer is kept constantly awake to such conditions and will insist on having his foods clean as well as pure.

I am also of the opinion that measures should be taken to put a stop to the frauds in short weight packages and short measure bottle goods. The percentage of this class of goods now being sold is quite large.

I am also obliged to report the matter of complaints brought to my notice of the killing of diseased animals for food purposes. My investigations of these complaints convince me that such conditions exist; that animals are being slaughtered, sold locally and shipped to the markets of the cities, that would be condemned if an inspection of the animal was had before slaughter, as is now required of all packing houses in the land. Such a condition is a menace to the consuming public, and a matter for serious consideration.

I have secured the conviction of one farmer for slaughtering and selling a diseased cow for food purposes. In another case, now pending, in an adjoining county, an ex-butcher engaged in buying stock and shipping to Chicago markets is charged with having bought an animal infected with an abscess under its jaws, had it slaughtered and put on sale in one market in the village for his neighbors to eat. It is reasonable to suppose that there are many cases of this kind that no one has any knowledge of except those engaged in this line of work.

The total number of samples taken and shipped to chemist 744
Total number of prosecutions .................................. 19
Total number of convictions .................................... 19

Respectfully submitted,

F. M. BUZZELL,
Chief Food Inspector.

---

HON. J. Q. EMERY,
Dairy and Food Commissioner.

SIR: In compliance with your request, I herewith submit my report as food inspector covering the biennial period beginning July 1, 1906, and ending June 30, 1908.

The work of inspection has included groceries, meat markets, drug stores, pop manufacturers, wine merchants, oyster dealers, oil dealers, ice wagons, slaughter houses, etc.

I have collected 1,106 samples, which have been submitted to the chemist.

Prosecutions were brought as follows:
20 grocers, for the sale of adulterated foods.
20 butchers, for the sale of adulterated sausage and chopped meat.
19 druggists, for sale of adulterated drugs (adulteration including, in some cases, wood alcohol).
4 wine dealers, for sale of adulterated wine.
3 milk dealers, for sale of milk below legal standard.
1 pop manufacturer, for the sale of pop containing saccharin.
1 butter agent, for the sale of oleomargarine for butter.
1 oyster dealer, for the sale of oysters containing preservatives.
1 wholesale oil dealer, for the sale of turpentine containing mineral oil.
1 proprietor of state fair stand, for the sale of adulterated cider.

MADISON, WIS., JULY 15, 1908.
This makes a total of 71 prosecutions. Of this number there were 70 convictions.

In my inspection of groceries and other places where food and drink were sold, I found conditions constantly improving and, in most cases, the retailer anxious to comply with the food laws. But will say that there are manufacturers and jobbers outside of the state who do not hesitate to sell adulterated goods to unsuspecting retailers.

The sanitary condition of groceries, meat markets and other places where food and drink are prepared, and especially in large cities, calls for improvement. I am of the opinion that a law should be passed with a view to bringing about better sanitary conditions.

Respectfully submitted,

W. F. Scott,
Food Inspector.