REPORT OF C. E. LEE, ASSISTANT DAIRY AND FOOD COMMISSIONER AND DAIRY SPECIALIST

Honorable George J. Weigle,

Dairy and Food Commissioner.

Sir:

This report is a statement of the duties performed during the year ending June 30, 1918.

I have had supervision of the work of the inspection of butter and cheese factories, condenseries, skimming stations, cream buying stations, market milk supply and dairy inspections.

The report of each inspection made by the men in the field has been closely studied. In a number of cases it was found necessary to write letters to operators of plants and to dairy men in order that the work of the inspector might be followed up and the department learn if the inspector's instructions had been carried out. This has necessitated the reinspection of certain factories and dairies by the men in the field or by me personally. In connection with this work it has been found necessary to hold conferences with the men in their respective territories or at the office.

During the past year I devoted a great deal of time to the inspection of the milk supply of several of the large cities. This work was carried on in cooperation with the regular inspector of this department for the territory in which the cities were located. In three of the cities visited it was found necessary to prosecute the operators of milk plants because the dairy utensils and premises were in an unsanitary condition. In each case a conviction was secured. In a few of these cities it was found that adulterated milk was being sold. In each case the offender was brought into court and a conviction was secured in all cases but one. Inspection was also made of a large number of dairies where the milk was produced in order that the department might have definite information regarding the handling of the product until it was delivered to a milk plant or to the consumers direct.

Several samples of butter were collected and submitted to the chemist. A few were found to be adulterated and as a result of this work three convictions were secured in the Dane County Municipal Court. In one case the fine imposed by the judge was $100.00 and costs, with the understanding that for the next offense a portion of the penalty would be a jail sentence.
An investigation was made of the method employed by one condenser-y in sampling and testing milk. An inspection was also made by me of nearly one fourth of all the condenseries in the state to determine if these plants were being operated in compliance with sanitary regulations.

Several meetings consisting of state or local butter and cheese makers’ associations, farmers’ clubs or gatherings and other associations of various kinds have been attended. At many of these meetings addresses have been delivered besides assisting in the discussion of various subjects that came up for consideration. In a few cases talks have been given before high school boys and girls on the subject of milk and methods of control. In one city this work together with a conference of the city officials and representatives of various organizations was the means, in part at least, of adopting a milk ordinance by the city council. This kind of work is very important. It is a means of informing the producers that they must furnish good wholesome food products and educating the consumers.

In June I attended two hearings called by the Joint Committee on Definitions and Standards, Washington, D. C. One of these hearings was held at St. Paul, Minnesota, and the second one at Washington, D. C. At the St. Paul hearing I was called upon to act with the committee in bringing out a full discussion of methods employed in the manufacture of butter and the possibility of the control of composition and high quality. At the Washington meeting I spoke on the need of a definition for butter that would represent that product when made with a view of maintaining quality and for the full protection of the producer and the consumer.

The increased value of milk, butter and cheese, in fact of all dairy products, due to abnormal or war conditions, has naturally made the producers more watchful of his product. He has laid more stress on the weight of the milk and cream sold and whether or not the Babcock test was correctly operated. Not only has the dairyman placed these questions before the factory operators, but he has also requested that the department investigate the accuracy of the testing done by the factory operator buying their product. This work has been referred to the men in the field and by them given full consideration.

The total number of factory inspections made by the men doing this kind of work was 3962 of which 2938 were made at cheese factories and 1024 at butter factories. Reports have also been received regarding the work of 2830 cheese makers and 1012 butter makers. The records show that 3397 dairy farms have been visited, 1241 milk fat tests, 597 lactometer readings and 4035 sediment tests have been made at cheese factories; 118 milk fat tests, 30 lactometer readings and 1318 sediment tests have been made of milk delivered to butter factories and condenseries. This does not include several hundred tests of milk and cream sold in the cities by the dealers or by the producers direct.

This department has cooperated with the Live Stock Sanitary Board
in promulgating the rules and regulations governing the pasteurization of factory by-products. The men in the field have also given instructions to the butter and cheese factory operators as to how this work may best be accomplished. In many plants it has been necessary to outline the needed additional factory equipment.

Mr. James Van Duser of the Milwaukee territory has devoted a great deal of time in the vicinity of that city in cooperation with the Health Department, inspecting the dairies producing milk and cream for that city.

The large exhibit of dairy products entered at the 1917 Wisconsin State Fair was mainly due to the efforts of this department. Mr. Fred Marty was the superintendent in charge of the dairy exhibit. He was assisted during the State Fair week by two of our other men. Four men from this department acted as judges of butter and cheese. Requests upon this department for men to assist in the judging of butter and cheese at the dairy department of the University, county and community fairs, etc. have been granted.

**Market Milk**

The market milk situation has had the usual amount of attention. In many sections the method of handling of milk and cream has materially improved over a year ago. Representatives of this department have made an inspection of the milk and cream supply of nearly all of the large cities and villages. In many places a reinspection was made for the purpose of checking up results of the first inspection. New problems have come up in connection with the milk supply because of the increased value of manufactured dairy products. For years certain dairy men have sold the milk and cream produced on their own farms direct to the city consumers. Thus the city was always assured of a supply of milk. With the advance in value of all dairy products the price for fluid milk and cream for family use should also increase in like proportion. In certain cities the consumers objected to the advanced price and as a result the milk supply was cut short. Many dairymen discontinued selling milk to the city trade and placed their product at a nearby butter or cheese factory. In some villages and smaller cities it was still possible to buy milk at from 7 to 9 cents a quart or even 13 quarts for one dollar. In the larger cities milk prices advanced to 11 cents per quart when sold by dealers or operators of large city milk plants. This advance was necessary to meet the demands of the producers and the increased cost of operation and distribution.

Another factor influencing the production and distribution of market milk was the impossibility in many cases of obtaining suitable help. Many dairymen delivering milk from their own herds depended upon their boys to distribute the same but the call for these boys by the government upset this system. The owner of the farm in many cases continued the distribution but at a great sacrifice. In a number of
cities the system of milk distribution as already stated has been changed from a house to house delivery to that of leaving the product at a grocery store or meat market. In other places the butter factory has become a place where milk and cream may be obtained when called for. The shortage of fresh fluid milk has increased the demand for evaporated milk.

In considering market milk problems, as a whole conditions have improved but in many localities, especially the larger cities, there is still a great deal of work to be done. Sanitary conditions of many milk plants were found below standard; in some cases milk was found below standard both in milk fat and in solids not fat. This department must exercise greater supervision over the milk supply of the larger cities than heretofore, whenever possible cooperating with the local board of health or the health officer rather than working independently.

Every city of 3,000 or over should be required to have an ordinance regulating the production and distribution of market milk. The work of our men would be greatly simplified and more efficiently done if they could obtain either from the health officer or city clerk the name and location of dairies producing milk for the city. The city council of Chippewa Falls passed a milk ordinance requiring among other things that each dairy man regardless of the size of his dairy apply for a license. The enforcement of the ordinance was placed in charge of the city board of health. That body through the city clerk requested this department to make an inspection. Every dairy was located and the distance traveled greatly reduced; the chairman of the board furnished transportation. It was also found that the mere fact of calling for a license had created in the minds of the dairymen a new interest in the work that they were doing.

Several of the larger cities are at present making some attempt to regulate the milk supply. Some find it very difficult if not impossible to get the city council to lend its support. In one large city the passing of an ordinance has been deferred for several months because the ordinance, among other things, held that all milk sold should be produced by cows found to be free from tuberculosis.

In certain cities when an attempt had been made to control the milk supply it was found that the milk and cream was above the average. The city of Eau Claire and also the city of Madison may be cited as fair examples, while in other cities not only impure milk but an adulterated product was found. The time has arrived in the development of the dairy industry of the state when steps should be taken to further safeguard the health of the consumers of fluid milk. This is true with reference to children who are in many cases dependent upon cows' milk from birth for a large per cent of their food. For all children milk is a necessity. It should therefore be required that all of the milk and cream sold as market milk and cream within the state should be produced by dairies where all cows are known to be free from tuberculosis, and in such state of health as may be prescribed by the State Live Stock Sanitary Board.
The department should also devote more time to the inspection of market milk although that is an impossibility considering the amount of work that is now required of the men in the field. The only solution to this problem would come from the addition of several men to the present force of eight inspectors and two assistant commissioners.

**Factory Inspection**

The inspection of butter and cheese factories was pushed very vigorously from the beginning of the year (July 1, 1917) until December when market milk and dairy inspection was taken up and continued until May when factory work was again resumed. While this work is being done, the men in the field also take care of the requests for special investigations of problems of one kind or another over which this department has jurisdiction. These requests may come from dairymen who feel that they are not being fairly dealt with as to weights and tests of milk or cream sold. Factory operators call for assistance when they suspect or have facts to show that certain milk producers are delivering an adulterated product. Occasionally the consumers call the attention of the department to the quality of the milk, cream, butter or cheese delivered to their homes, but this is not done as frequently as it might.

The second year of the butter and cheese factory operators licensing law ended December 31, 1917. The good work accomplished during the first year was again noticeable in the second year. The full intent of the law is still not known to some men who engage in the operation of a butter or cheese factory. This together with the rather large number of cheese factories that change hands during the year, increased the work of the inspectors. It necessitated the reinspection of individual plants even to two or three times.

Many new factories have taken the place of what were considered useful buildings, but which were not adequate to the needs of present day requirements. Permanent repairs have been secured on many factories, and they are operated now in compliance with the requirements of the licensing law and the rules and regulations. Activities along these lines would have been more marked had it not been for the restriction placed on the erection of new buildings and the difficulty found in many sections in obtaining skilled labor for construction. When conditions again become normal many other improvements will naturally come about as a result of extensions of time.

The thirty months of the licensing law (January 1916 to July 1918) has resulted in more modern factory buildings with improved light and ventilation. Improved factories have had a good effect on the makers. In many cases they have been given the necessary material with which to clean both utensils and factory. Operators are cooperating with the makers in order that the license law rules and regulations are complied with. During the coming year it will be impos-
sible to secure improvements, but there should be no let-up in the enforcement of those laws and regulations dealing with sanitation. The excuse so often made that shortage of help makes it impossible to keep the factory and utensils clean should not be given much consideration when handling valuable food. The time required to clean the factory and utensils is small compared with the work of actually making the product.

In many places the manner of handling the factory sewage has been improved but there are still factories where the men in the field must insist on greater care being taken in handling the factory waste in such a manner that no offensive odors are created. It is to be regretted that I find it necessary to state that more time must be devoted to the inspection of the condenseries and milk plants. From an investigation made the managers of these plants have grossly violated the state laws relating to cleanliness of utensils and premises. These conditions must be improved even if it is found necessary to delegate one man to inspect all of these plants. Some of these condenseries were found in a most sanitary condition, but others were found poorly managed. No one was held responsible for the quality of the raw material received nor the cleanliness of the plant, cans and utensils used.

**Butter and Cheese Makers**

Since the introduction of the licensing law, the men in charge of the actual making of the butter and the cheese have been reported on a separate inspection sheet. This system has made it possible for the department to know from actual records the efficiency of the men held directly responsible for the making of approximately a yearly output of 100,000,000 pounds of butter in 850 factories and 277,000,000 pounds of cheese in 2600 cheese factories. Many of these men have had years of service and they have played a very important part in the development of the factory system. They have seen the dairy industry grow from an income of $20,000,000 a year to the 1917 mark of $190,000,000. Naturally the older men are being replaced by those of less experience.

The dairy industry must do its share to aid the government in its important work. This has taken many of the trained makers and others who were acting as helpers, with a view of learning the trade. Others, because of greater remuneration in other lines of work have left the factories. These conditions must be met and unless it is properly directed the dairy industry may receive a set-back due to improper handling of the product from the farm to the consumer by untrained men. The immediate step that must be taken as a safeguard is to advise the operators to increase the wages of trained men still employed as makers. So far the increase has not equaled the income of men engaged in less important work. This in part is
due to many factories being operated in a cooperative manner, and no one is held directly responsible for that phase of the work. The state association could do a great deal in improving this condition. Naturally the inspectors and others connected with this department met these men from one to five or more times a year, thus getting in touch with new ideas, but the inspector’s time is limited because of the territory he must cover.

The efficiency of the makers in charge of the butter and cheese factories will depend upon their training. They are exceedingly busy but they must be guided in an intelligent way either in small or large groups.

It should be possible for the representatives of the dairy and food department to assist the makers in locating the causes of defects in flavor and general make-up of the finished product of any factory. A little of this work is now being done, it being limited to the size of the territory or the number of inspections that must be made during the season in order that the territory may be covered at least once. During the past four years the number of factories in operation and the pounds of butter and cheese produced have increased but the number of inspectors employed has not been increased.

**Cream Buying Stations**

In several counties there has been an increase in the number of stations in operation, not alone because of an increase in the available supply of cream but rather due to the number of creamery companies that are bidding for this product. Wisconsin factorymen come in for their share of the spoil together with Illinois, Iowa and Minnesota Operators. The usual policy adopted is to send a field man or advance agent to look over the territory. If the outlook is good, some one is secured to operate the station. The room selected may be in a vacant building, a grocery store or meat market, and the equipment required besides a scale and a tester is a number of ten gallon cans. In many of these establishments no provision whatever is made for the proper cooling and storing of the cream until it is hauled to the depot. The man in charge may or may not have any knowledge of sampling, testing or grading the cream. Hence there is no standard as to quality of product that shall be received. The field man may act as an instructor for seven to ten days.

In certain localities there may be a need of someone to act as a cream buyer in order to avoid the shipping by each individual of a small lot of cream in a large can. The station agent overcomes this and the product is handled as one shipment. In many communities the cream station is a hindrance to the progress of the industry. Many of these stations are located in a well-established creamery community and depend largely upon the product of poorly managed
dairies. The creamery has certain standards as to quality of the cream that shall be used in the manufacture of butter. The patron who fails to comply and is told how his cream may be improved, often resents the offer with the remark: "The station will take my cream regardless of quality." In one village of southern Wisconsin the agent failed to locate a station but before giving up his task he asked the creamery operator to ship to the company that he represented all the low grade cream received at a premium of 2 cents per pound of butter fat, above cost. In another city where a creamery has been in operation for nearly twenty years the station operator received in one month 511 ten-gallon cans of cream. The express charges amounted to $173.00, cartage at shipping point $25.00 and the price paid the producers was less than that paid by the local creamery.

Many station men are not complying with the law in so far as obtaining a license from the chairman of the local board of health is concerned. If they are licensed it is not on a uniform basis. The administration of the law by a local board does not have the same effect as if handled by a state body. Every effort should be made to change section 1636—70 of the statutes so as to place all milk or cream depots or stations under the control of the dairy and food commissioner. The present law should also be so amended as to give this office authority to formulate rules and regulations governing these stations. The quality of Wisconsin butter as well as that made from the product of cream buying stations or depots will improve when they are operated in compliance with reasonable regulations.

WHEY CREAM PRODUCTION

A by-product of cheese factories is very often considered of little importance by the cheese makers and hence is often neglected. The department must encourage this industry but at the same time must protect the consumer.

There has been a marked increase in the production of whey cream during the past year, largely due to the increased value of butter fat and a better understanding by the cheese factory operators of the need of conserving butter fat. A large portion of this cream is churned by butter factory operators whose plants are located in cheese territories and who depend largely upon whey cream for their receipts. Some of it is shipped out of the state and the balance is churned at the factory where it is produced and the butter is sold to the patrons of the factory as whey butter. The average quality of whey cream has been improved largely due to the operators following out the suggestions made by this department as to the care the cream should receive, and the creamery operators being more exacting as to the kind of cream they accept. The improve-
ment will be still more marked when all of the cheese makers do their part in keeping the cream free from foreign taints and do not allow it to become high in acid before it is delivered. Another hindrance to quality is that some butter factory operators have no fixed standard as to the quality of the cream churned.

The law requiring that butter made from whey cream shall bear the label "whey butter" has had its good effect. A few of the butter factory operators handling this product have willingly complied, while others have been very indifferent. As stated, in many localities the whey cream is churned at the cheese factory where it is produced and the butter is sold to the patrons. This is the most logical method of disposing of this by-product of the cheese factories. It makes it possible for the milk producers to obtain butter churned from a portion of the fat in the milk of their own production at a lower price than if the same butter was bought at a grocery store.

The law dealing with the branding of whey butter should be amended to include the labeling of whey cream. Such a law would protect the buyer who may claim that he is not in a position to know the kind of cream he is receiving and also make it difficult to enforce the law dealing with the labeling of butter from whey cream. The whey butter industry will continue to increase and it rests with the cheese makers and factory operators as to the quality of this product and whether or not they will establish a demand for whey butter that is brought about by high standard of quality.

**Quality of Wisconsin Butter**

So far as we are able to learn the quality of the butter compares favorably with that of previous years. In certain localities the improvement has been very marked, while in other sections no change has taken place. Competition for cream by the butter factories and cream buying stations has increased, thus making it more difficult to maintain high quality. The number of factories making butter of very high quality has increased because there is a demand for that grade by butter firms having an outlet for such goods. Several of the creameries where this kind of butter is made were referred to the parties having charge of filling the government contract of Navy butter, with the result that Wisconsin did its share in filling the order.

The butter factory operators of Polk county and others who were able to produce this high grade butter deserve special mention. There are many other plants making this grade of goods throughout the entire year selling on a special contract and hence were not in a position to aid in the filling of the government order. This high grade butter is not sold on the open market but finds an outlet through the channels that recognize quality or to firms that sell butter bearing an established brand.

At the 1917 Wisconsin State Fair, 11 per cent of the creameries of
the state entered tubs of butter. The average score placed upon this butter was 93.12 with twelve tubs that received scores of 95 to 96. Another lot of 26 tubs received scores from 93 to 94.88 with only five entries scoring below 90. When butter of this high quality is entered from various sections of the state, it reflects credit upon an industry that should be encouraged and given every assistance possible.

Each representative of the department in performing his duty naturally points out to the operators and makers with whom he comes in contact the changes, if any, that should be made to bring about an improvement in the quality of the finished product. Very often our representatives are told that the suggestions made if followed out will improve the quality of the butter, but the extra expense in doing the work outlined will not be offset by an additional price that the butter may bring on the open market. Such a remark is based on facts because the Bureau of Markets in its Daily Butter Market Bulletin very often gives the quotation for 90 point score centralized butter equal or even higher than the quotation for 92 or even 93 scoring butter received from local factories.

As the dairy industry of the state has progressed in volume and total value, conditions of factories and training and experience of the makers have also improved, but the marketing condition which bears a direct relation to the full development of the industry has made practically no change. The butter industry is very largely controlled by the dairymen who produce the milk, the creameries in many localities being owned by the farmers and operated on a cooperative basis. Other plants are owned by individuals who have a direct interest in the community. The so-called centralized system of operating butter factories has taken control of certain territories but not to the extent that it has monopolized all of the cream in a given territory.

It would seem advisable that certain changes be made in the general system of operating the factories and in the marketing of the butter in order that the state may place upon the market butter of uniformly high quality. The system now in vogue may have been adequate in the past but it will not bring desired results in the future when one considers the efficiency of the larger organizations in getting a firmer hold upon the desirable markets of the world.

SUGGESTIONS AS TO FUTURE AID OF BUTTER FACTORY OPERATORS

1. That dairy inspections be increased with a view of bringing about a more uniform method of handling the product until it is delivered to the factories.

2. That the factory operators and producers be aided in securing cream for the purpose of being made into butter which contains at least 30 per cent of milk fat. At present the average fat content of the cream received at a large number of the factories is too low to make
it possible to operate the plants economically and to secure desirable results. The loss to the creamery industry from this cause alone exceeds $1,000,000 annually.

3. That the creameries be organized into groups or units to be supervised in such a manner as to obtain uniformity in the general method of operation or management and method to be followed in the manufacture of butter. This would make it possible to place upon the market butter of one grade in car lots. Butter in car lots always nets the shippers greater returns than if small lots are sold to same or different buyers. It would also do away with the duplication of territory covered by many plants which is not only a detriment to quality but increases the cost of factory operation.

4. That a system of marketing under state control be established in order that the product may be properly graded and sold on quality basis.

5. That state aid be furnished to each organization of local creameries banded together for the purpose of improving factory conditions and having agreed to employ a special dairy and food inspector to act as a field agent.

THE DAIRY INDUSTRY HAS MADE PROGRESS

In the report for the year ending July 1, 1917, figures and maps were presented to show the development and changes in the dairy industry for the period 1909–1915. I therefore deem it very important that a similar comparison be made for the two year period 1915–1917. It might be said at the outset that the enormous increase in total value of all dairy products was in a large measure due to the increased value of all commodities brought about by rather abnormal or war time conditions. There has been an increased demand for dairy products especially condensed milk and cream and evaporated milk to a certain extent. The decrease in local market milk consumption has not been sufficient to influence to any large extent milk production in the southeastern section of the state and that portion of eastern Wisconsin supplying Milwaukee with milk.

The price paid for the raw material delivered to milk plants, condenseries, butter and cheese factories, did not advance the same. Cheese factory prices made the greatest advance and butter factory prices the least.

In 1915 and 1917 prices received by nine butter factories located in the various butter producing sections placed in 1915 upon the market 4,843,588 pounds of butter valued at $1,359,129.88. This is an average of 28 cents per pound for butter sold. These same plants manufactured 4,534,340 pounds of butter in 1917, valued at $1,855,134.42, or an average of 40.9 cents per pound of butter. The price received increased 46 per cent. The same situation prevailed as to wholesale
prices received for all the cheese manufactured in the two years. In 1915 the wholesale price received by the factory operators was 13.9 cents and in 1917 the average price being 22.9 cents, an increase of 64.7 per cent. The price paid to patrons of market milk plants in 1915 was approximately $1.50 per 100 pounds and $2.27 in 1917, or an increase of 77 cents for 100 pounds which amounts to 51 per cent. (The above prices were paid by one milk plant for the two years.)

Certain definite changes have taken place that have altered the ratio of butter production as compared with cheese, or both butter and cheese, in comparison with market milk and the condensing industry. In 1915 the total output of factory butter amounted to 124,636,071 pounds, valued at $34,744,774.51, and in 1917 the output of butter was 101,325,285 pounds valued at $39,583,037.96, a decrease in production of 18.9 per cent and an increase in the value of 13.8 per cent.
There was a decrease in pounds of butter manufactured in all the shaded counties, 1915 and 1917 compared. The number placed in the white area in the county shows the decrease in the number of factories in operation. To illustrate: There was less butter manufactured in Grant county in 1917 as compared with 1915 and nine plants ceased operation.

Map 2—Shaded counties indicate increase in cheese produced, 1915 and 1917 compared.

The cheese produced in the factories in 1915 was 234,929,037 pounds and 277,267,444 pounds in 1917, an increase of 18 per cent. The 1915 value of cheese was $32,835,922.53 and 1917 the value was $63,470,882.69, an increase of 93.3 per cent.

Shaded counties indicate increase in pounds of cheese produced, 1915 and 1917 compared. The number within the white area gives the increase in the number of factories in operation per county. It
is noticeable that nearly the entire state shows an increase. The five counties of the north will eventually have their cheese factories.

In 1915 the condenseries used 396,607,532 pounds of milk valued at $9,138,520.79 while the 1917 data gave 747,540,078 pounds valued at $22,815,693.75, an increase of 88.5 per cent in the amount of milk used and 149.6 per cent in the total amount paid for this product. Map 3 gives the approximate locations of the 53 condenseries in the state, July 1, 1918. Not all of these were in operation in 1917, some only a portion of that year. It is apparent from this map that these plants are no longer confined to the so-called milk territory of southeastern Wisconsin but have invaded the well-established butter and cheese districts.

Map 3.—Location of Condenseries—July 1, 1918.

It is of interest to note another change that has taken place in the two years on the basis of the pounds of milk used in the manufacture of butter, cheese and condensed milk. Assuming that each pound of butter represents 25 pounds of milk and each pound of cheese 10 pounds, and for condensed and evaporated milk the actual number of pounds are given in the following table:

<table>
<thead>
<tr>
<th>Pounds of milk for</th>
<th>1915</th>
<th>1915 % of total</th>
<th>1917</th>
<th>1917 % of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butter</td>
<td>8,115,901,775</td>
<td>55</td>
<td>2,533,132,135</td>
<td>41.8</td>
</tr>
<tr>
<td>Cheese</td>
<td>2,349,290,370</td>
<td>40</td>
<td>2,772,674,440</td>
<td>45.8</td>
</tr>
<tr>
<td>Condensed and evaporated milk</td>
<td>396,607,532</td>
<td>7</td>
<td>747,540,078</td>
<td>12.4</td>
</tr>
<tr>
<td>Totals</td>
<td>5,861,799,677</td>
<td></td>
<td>6,053,346,643</td>
<td></td>
</tr>
</tbody>
</table>

Per cent of increase in milk used 3.2
### TABLE A

Comparison of Butter Production

<table>
<thead>
<tr>
<th>Counties by Groups</th>
<th>Pounds 1915</th>
<th>Pounds 1917</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashland, Bayfield, Burnett, Douglas, Forest, Florence, Iron, Langlade, Lincoln, Marinette, Oconto, Oneida, Price, Rusk, Sawyer, Taylor, Vilas, Washburn</td>
<td>6,875,538</td>
<td>7,546,689</td>
</tr>
<tr>
<td>Barron, Dunn, Pierce, Polk, St. Croix</td>
<td>18,254,769</td>
<td>18,364,296</td>
</tr>
<tr>
<td>Chippewa, Clark, Eau Claire, Marathon, Outagamie, Portage, Shawano, Waupaca, Wood</td>
<td>17,878,863</td>
<td>11,991,910</td>
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<tr>
<td>Buffalo, Crawford, Juneau, Jackson, La Crosse, Monroe, Richland, Sauk, Trempealeau, Pepin, Vernon</td>
<td>32,717,210</td>
<td>27,934,638</td>
</tr>
<tr>
<td>Brown, Calumet, Door, Fond du Lac, Kewaunee, Manitowoc, Sheboygan, Winnebago</td>
<td>10,566,029</td>
<td>7,876,421</td>
</tr>
<tr>
<td>Adams, Columbia, Dodge, Green Lake, Marquette, Waukesha</td>
<td>8,667,658</td>
<td>5,851,935</td>
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<tr>
<td>Dane, Grant, Green, Iowa, Lafayette</td>
<td>12,265,885</td>
<td>8,299,751</td>
</tr>
<tr>
<td>Jefferson, Kenosha, Milwaukee, Ozaukee, Racine, Rock, Walworth, Washington, Waukesha</td>
<td>17,400,719</td>
<td>13,459,945</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>124,626,071</strong></td>
<td><strong>101,325,285</strong></td>
</tr>
</tbody>
</table>

### TABLE B

Comparison of Cheese Production

<table>
<thead>
<tr>
<th>Counties by Groups</th>
<th>Pounds 1915</th>
<th>Pounds 1917</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashland, Bayfield, Burnett, Douglas, Forest, Florence, Iron, Langlade, Lincoln, Marinette, Oconto, Oneida, Price, Rusk, Sawyer, Taylor, Vilas, Washburn</td>
<td>7,003,168</td>
<td>12,651,048</td>
</tr>
<tr>
<td>Barron, Dunn, Pierce, Polk, St. Croix</td>
<td>4,682,630</td>
<td>8,575,831</td>
</tr>
<tr>
<td>Chippewa, Clark, Eau Claire, Marathon, Outagamie, Portage, Shawano, Waupaca, Wood</td>
<td>50,257,771</td>
<td>63,772,563</td>
</tr>
<tr>
<td>Buffalo, Crawford, Jackson, Juneau, La Crosse, Monroe, Richland, Sauk, Trempealeau, Pepin, Vernon</td>
<td>13,864,468</td>
<td>20,556,972</td>
</tr>
<tr>
<td>Brown, Calumet, Door, Fond du Lac, Kewaunee, Manitowoc, Sheboygan, Winnebago</td>
<td>77,903,406</td>
<td>78,730,245</td>
</tr>
<tr>
<td>Adams, Columbia, Dodge, Green Lake, Marquette, Waukesha</td>
<td>26,347,492</td>
<td>32,911,836</td>
</tr>
<tr>
<td>Dane, Grant, Green, Iowa, Lafayette</td>
<td>40,362,889</td>
<td>40,293,067</td>
</tr>
<tr>
<td>Jefferson, Kenosha, Milwaukee, Ozaukee, Racine, Rock, Walworth, Washington, Waukesha</td>
<td>14,507,233</td>
<td>19,774,982</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>234,929,037</strong></td>
<td><strong>277,267,444</strong></td>
</tr>
</tbody>
</table>
In order to further illustrate the changes that have taken place and also to show the output of butter and cheese in the various dairy sections, the state is divided into eight districts as shown on Map 4, and Tables A, and B give the counties and pounds of butter and cheese produced in 1915 and 1917, for each group. As already stated butter production in the state decreased, yet districts No. 1 and No. 2 increased in butter production because of the development of dairy farming and the creamery industry having the advantage when dairying is yet in its infancy. As the cheese factory industry moves northward it will show even a greater increase than for 1915 to 1917. The five counties of Taylor, Lincoln, Langlade, Oconto and Marinette made the bulk of the cheese, namely, in 1915, 6,682,376, out of a total of 7,003,168 for the 18 northern counties and 11,645,071 in 1917, out of a total of 12,651,948 pounds or 95 and 92 per cent respectively.
The counties in groups No. 2 and 4 produced over 45 per cent of the entire amount of butter, and only a little over 10 per cent of the cheese. Groups No. 3, No. 5 and No. 7 in 1917 produced 63 per cent of the cheese with Dodge the banner county in total pounds of cheese produced—largely brick cheese, Sheboygan the largest output of American cheese, and Green of Swiss cheese.

**METHOD OF TRANSPORTATION**

Until the past three years the inspectors of this department in performing their duties depended upon railroads for means of transportation between cities and livery in making inland points. Since that time several of the men have used their own cars at an allowance of 10 cents per mile. In October, 1917, the department purchased two Ford automobiles and in May, 1918, another automobile.

It is impossible to give definite data as to the actual cost of the operation of these automobiles because of changing conditions and the nature of the work performed and also because of the difference in the territory covered in the short time in which these cars have been used. Prior to two years ago it was possible to hire livery at a cost of $3.00 to $5.00 per day, while at the present time in many localities of the state horses are not maintained for the purposes of livery and automobile hire can only be had at a cost of $2.00 for the first hour and $1.00 for each succeeding hour. If the drive is a long one a charge of 15 cents to 25 cents per mile is made. The use of individually owned cars at a cost of 10 cents per mile was a great saving to the state, together with an increase in the amount of work accomplished. Not all of the men, however, owned cars of the type that might be operated within the allowance made.

From all indications it is economy for the state to furnish the men with automobiles. Two of the automobiles purchased were used in November and December of last year and from April to July of this year with very good advantage. One inspector reported the following for two consecutive weeks when state car was used: The distance traveled was 245 and 175 miles and the expense including hotel bill was $26.68 and $19.48 respectively. For two weeks when automobile hire was used in place of state cars the expense amounted to $46.94 and $47.20. One of the inspectors used his own car for a month at 10 cents per mile and his entire expenses for the month amounted to $182.80. He was later furnished with a state car with the result that his expense was reduced to $124.14.

The advantages to the state in furnishing the inspectors of the dairy and food department with automobiles may be summarized as follows:

1. Decrease in cost of making inspections.
2. Increase in the number of inspections made per week, which means that a larger territory can be covered by each man.
3. Delays due to train accommodations on many of the branch lines avoided.
4. Makes it possible for the men to start out on Monday morning and follow a continuous route until the end of the week, while if livery is used, they very often are obliged to return to the starting point before the trip is finished.
5. It means the saving of liverymen for other lines of work. Livery hire invariably means a driver.
6. It means the saving to the state of the wages of the driver and his hotel bill.

Respectfully submitted,

C. E. Lee,
Assistant Commissioner