Wisconsin as a factor in the nation's supply of butter. 1913

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WISCONSIN AS A FACTOR IN THE NATION'S SUPPLY OF BUTTER.

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Wisconsin, the greatest dairy state in the Union, is located south of Lake Superior and lies between Lake Michigan on the east and the Mississippi River on the west, with a distance of 300 miles from its northern point to the border of Illinois on the south, and 250 miles, the greatest distance, across the state, The numerous lakes and rivers, abundant rainfall, desirable climate and fertile land, to produce food for her ever increasing cow population and a class of people that understands how to produce, manufacture and handle dairy products, makes it naturally a state where dairying will remain a permanent industry.

Wisconsin has been fortunate as to its market facilities, without which it would have been impossible to have developed its most important branch of agriculture. It has within its own border the city of Milwaukee, that draws heavily upon the eastern portion of the state for its supply of milk, cream and butter. Duluth, Minn., and the twin cities to the northwest, Dubuque, Ia., on the Mississippi River to the southwest, and several other large inland cities furnish markets in addition to those located along the 500 miles of lake shore. There is a network of railroad that can, within a short time, place the products manufactured for direct consumption or storage, in two of the greatest distributing markets of the nation—Chicago and New York City.

Dairying Slow to Get a Foothold.

The early history of the dairy industry in Wisconsin is the same as that of any other state. The farmers preferred to grow small grain and rob the soil of its fertility. Ex-Governor Hoard once said, "What saved Wisconsin from the wave of destruction in farm fertility and land value was the coming of the cow." "Less than fifty years ago," according to Hibbard, "a single pound of marketable butter was often worth more

in Madison, the site of the state capitol and its university, than a bushel of wheat. Yet with a small investment in cows it was entirely possible to turn the produce of an acre into seventy-five pounds of butter instead of eight or ten bushels of wheat and the cash outlay for maintaining the dairy, after it was once started, was not equal to the expense of raising wheat. In spite of these possibilities, and they were thoroughly tested, butter was shipped from other states to Wisconsin even as late as 1860, while for half or more of the farmers to buy butter, cheese and even milk was so common as to excite no comment."

About ten years later, or in 1872, Ex-Governor Hoard, the father of the dairy industry, issued a call that resulted in the organization of the Wisconsin Dairymen's Association. The southern portion of the state at that time manufactured somewhere in the neighborhood of 3,000,000 pounds of cheese and not to exceed 6,000,000 pounds of butter. Most of this was probably made during the summer months in the farmers' kitchen by the housewife and stored in the cellar until offered for sale at the grocery store. Very little of the manufactured product probably reached Chicago.

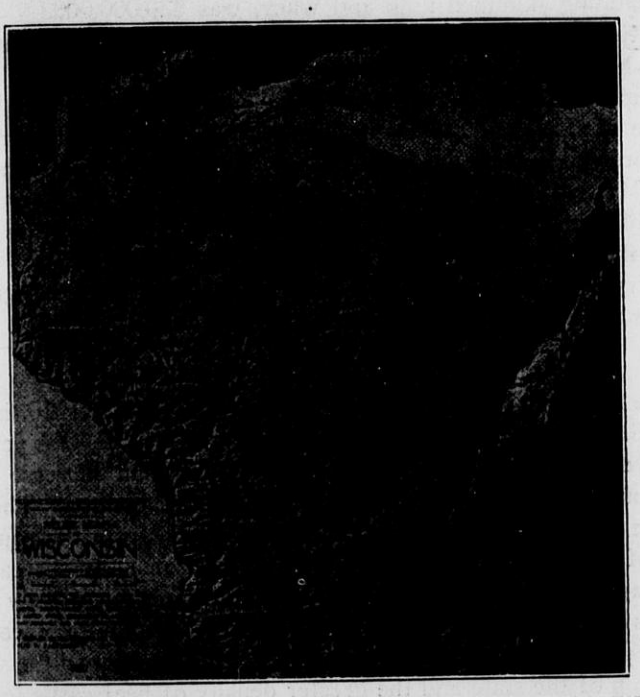
In 1874, Gov. Hoard, as a representative of the above mentioned association, was sent to Chicago for the purpose of looking into the transportation of the dairy products. The result of this trip meant the introduction of the first refrigerator car into the state to replace the common freight car. With this small beginning of one car in 1874 the industry has grown to such an extent that the transportation of the factory made butter for 1909 alone required a solid line of refrigerator cars each containing 756 sixty-pound tubs, nineteen miles long, to move it to the markets of the nation. This has all taken place in a period of thirty-five years.

Methods Retarded Growth.

In the early days the general method of handling the milk and the manufacture of the dairy products had a retarding effect on the progress of the dairy industry. The attempt to place upon the market a filled cheese, not labeled as such, would have ruined an industry, that, since its manufacture has been made prohibitive, has grown to its present magnitude. The quality of cheese and butter is high, because of improved methods of handling the product on the farm and at the factory. Coupled with this has been the determination on the part of a large number of factory owners to make an honest, sanitary food product.

Education Has Been Beneficial.

The dairymen of Wisconsin owe a great deal to the various factors that have tended to place them on a higher plane of efficiency. The Wisconsin Dairymen's Association for some forty years has led the way. The Farmers' Institute, The Dairy and Food Commission, the Butter and Cheese Makers' Association and the Dairy and Agricultural Press have all had an influence on this work.



THE HIGHLANDS OF SOUTHERN AND WESTERN WISCONSIN ENCOURAGE DAIRY FARMING.

The agricultural college and the dairy school in their early missionary work did a great deal in pointing the way for higher production and better and more sanitary methods in handling the product of the farm and at the factory. The 300 to 500 young men that each year, for the past decade, have attended the short course in agriculture, and the 100 to 150 that have yearly taken the dairy course, have very largely returned to the farms and the factory, thus connecting the distance between the center of learning and the farmer.

The Growth Has Been Steady.

For the ten years prior to 1890, dairying as a farm industry was receiving a firmer footing in the developed, as well as the less developed agricultural districts. This might be considered the readjusting period of placing it in its true relation to the various factors that bear directly upon the development of this industry. At that time, according to the dairy and food commissioner's report, the total value of the dairy products, including skimmed milk and whey, was $20,000,000.

During the next decade it reached $40,000,000, and at the close of 1910 it had again doubled, or represented an industry that netted the state some $80,000,000 annually.

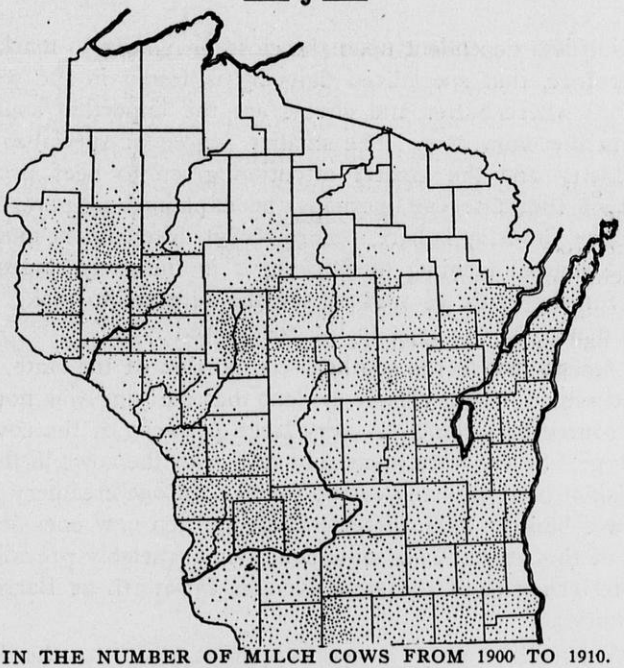
The rapil increase following 1890 and the placing of dairy farming on a more stable basis can very largely be attributed to the invention of Dr. S. M. Babcock. The value of a rapid method of determining the fat in milk placed the creameries on a firm foundation and the cow selection on the basis of butter fat production.

Dairying in Wisconsin represents three distinct lines: butter, cheese and milk. The basis for each is the cow and the food supply.

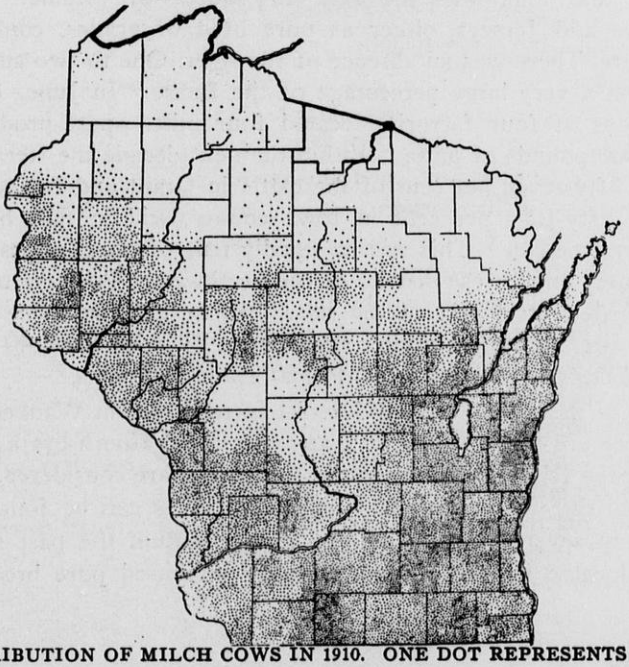
The Distribution of Cows.

The number of dairy cows in Wisconsin April 15,.1910, is given by the U. S. census as 1,471,591. This is an increase of 47.4 per cent for the 10-year period 1900 to 1910. "There was an increase shown in every county in the state, excepting Milwaukee county. The increase has been the greatest in the cheese regions aside from the southwestern corner of the state." (Bul. 210, Wis. Exp. Station.) In the eastern part of the state cattle raising is followed much more exclusively for dairy purposes than in the western section, where cattle are kept very largely for beef production. The greater density of dairy cows in the southwestern section of the state and the greater density of beef cattle in the western can be explained in part by the better market for milk in the former region. The higher price paid for milk for direct consumption in regions contributary to city markets makes it less profitable to feed milk to calves, makes it more important to keep cows of the dairy type, makes it more important that all of the feed supply be turned to the dairy herd, and at the same time the specialization on the dairy type of cows makes the steer calves less worth keeping for beef animals.

Specialized dairy farms are not, however, confined to the immediate vicinity of the markets. Dairy farming has become highly specialized in Jefferson county, which leads in butter production, and in Sheboygan and Green counties, which are leaders in cheese production, butter and



INCREASE IN THE NUMBER OF MILCH COWS FROM 1900 TO 1910. ONE DOT REPRESENTS 100 COWS IN 1900.



THE DISTRIBUTION OF MILCH COWS IN 1910. ONE DOT REPRESENTS 100 COWS.

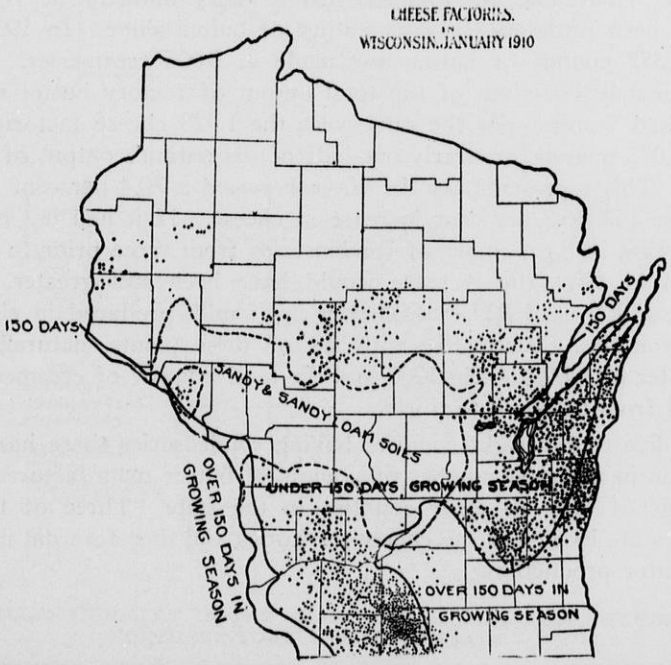
cheese being less dependent upon the close proximity to market. It follows, therefore, that specialized dairying is found in the western part of the state where butter and cheese are the important sources of income from the dairy cow. The smaller degree of specialization in the dairy industry and the greater attention given to beef production in that part of the state can, perhaps, be explained in part by the fact that the dairy industry is here a more recent development and the transition from general farming to dairying is in the early stages. Time is required for the cattle as well as for the farmers to make the change from the many-purpose type to the specialized type."

In a recent visit to the southeastern portion of the state, or the less specialized region, it was clearly evident that dairying was not the farmers' only source of income. A very large per cent of the cows were of the beef type. Steers were invariably seen with the cows in the pastures. The silo is not used on many of the farms. In one creamery locality the first silo was built in 1909, three in 1912, and ten new ones started prior to July 1 of this year. This same condition invariably prevails throughout the western part of the state even as far north as Barron and St. Croix counties.

In Walworth county it was apparent even to the less casual observer that milk was the farmers' source of income. Holsteins, Guernseys and Jerseys, either as pure bred or grades, could be seen everywhere. There was an absence of the steer. One to two silos were to be seen on a very large percentage of the farms. In June, 1913, some 250 patrons of four factories located four miles apart produced daily over 80,000 pounds of milk. Within the next decade the steer that now numbers fifty-seven per cent of the cattle in Grant and Lafayette counties, and fifty-four per cent in Iowa county, will in part be replaced by a dairy type cow. This will be equally true of the counties located in the creamery and cheese district of the northwest. Price county, located in the north central part of the state, had in 1910 only one pure bred Holstein sire. Two years later there were 23, with some 40 pure bred cows and heifers, and from 600 to 800 grade Holsteins.

It is of more than passing interest to note that in Waukesha county alone there are today nearly as many pure bred Guernseys as are to be found on the Island of Guernsey. If the grades are considered, then they far exceed the number in the Island. Holsteins can be found in large numbers in several sections of the state. Within the past month 123 farmers located in 36 different counties purchased pure bred Holstein sires.

THE DISTRIBUTION OF STEERS AND BULLS ONE YEAR OLD AND OVER, APRIL 15, 1910. ONE DOT REPRESENTS 100 HEAD.



WHERE NEARLY ONE-HALF OF THE NATION'S SUPPLY OF CHEESE IS MADE.

Food Supply Abundant.

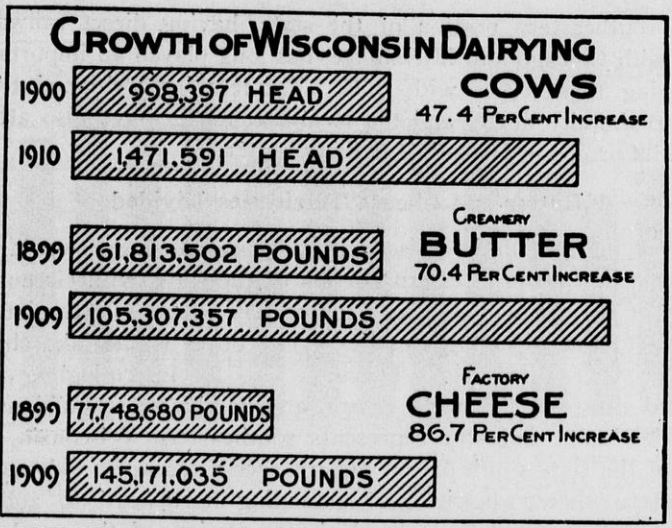
According to Bulletin 210, Wisconsin Experiment Station, "The pasture, hay and corn lands of the state form the basis of the live stock industry. No data are available showing the area in pastures, but the sum of the hay and corn acreage seems to give a good index to the feed basis of the dairy industry. In Green, the leading cheese county of the southern portion of the state, in 1909, 20.3 per cent of the improved land was planted to corn and 20.7 per cent was put in hay, with 26 cows per hundred acres of corn and hay grown, while Clark county taken as a representative of north central Wisconsin had only 5.8 per cent of the improved land in corn, but 42.7 per cent in hay, with 22 cows per 100 acres of corn and hay grown."

The absence of creameries and cheese factories in certain portions of the older sections of the state as well as in the newer regions of the north is explained by the absence of hay and corn on account of a lack of improved land to furnish the food supply for the cow. With the clearing of the land and the development of agriculture in the northern portion of the state dairying, especially the creamery industry, will expand.

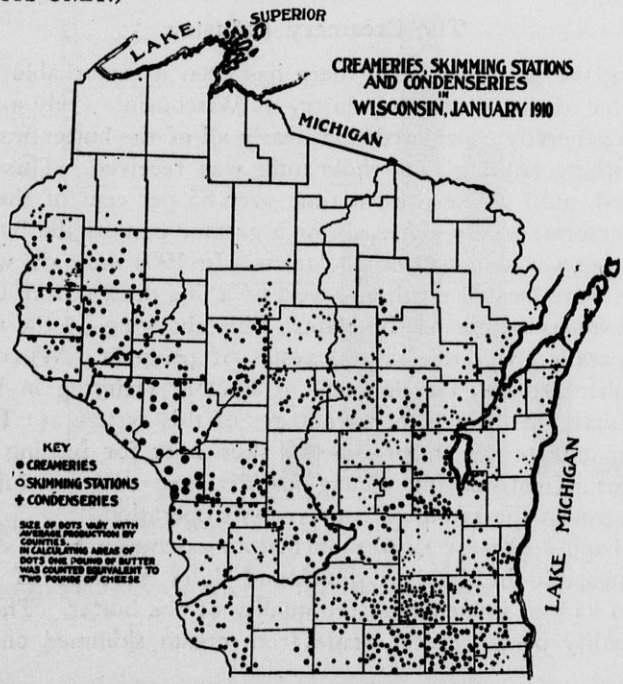
Butter Is Not Wisconsin's Only Dairy Product.

The remarkable development of the dairy industry in Wisconsin has not been represented by its output of butter alone. In 1909 some 105,307,357 pounds of butter was made in 1,005 creameries. This is approximately one-sixth of the total output of factory butter made in the United States. For the same year the 1,928 cheese factories made 145,171,035 pounds, or nearly one-half of the nation's output of factory cheese. This represents for the 10-year period a 70.4 per cent increase in butter and 86.7 per cent increase in cheese. If it had not been for the increase in the number of condenseries from three prior to 1905 to nineteen in 1909, the increase would have been still greater. These plants in 1909 used 229,958,000 pounds of milk produced in eight different counties. Walworth, with six of these plants, naturally made less butter in 1909 than in 1905 and the total number of creameries was reduced from fifty-two to thirty.

In five of the eight counties having condenseries there has been a reduction in the total number of pounds of butter manufactured. This was true of only 10 other counties in the state. Three of the condenseries are located in the cheese territories and therefore did not influence butter production.



THE GROWTH OF THE DAIRY INDUSTRY IN WISCONSIN HAS BEEN PRINCIPALLY IN BUTTER AND CHEESE PRODUCTION ALTHOUGH THE CONDENSING INDUSTRY HAS EXPANDED RAPIDLY DURING THE LAST FEW YEARS. (BUTTER AND CHEESE STATISTICS REFER TO THE FACTORY PRODUCTS ONLY.)



THE CREAMERY INDUSTRY IN THE NEAR FUTURE WILL ALSO OCCUPY THE NORTHERN PORTION OF THE STATE.

The southeastern portion of the state, having direct railway connections with Chicago and Milwaukee, has long played an important part in supplying these cities with milk. Farmers have shipped the milk directly to the city dealer and the local creameries have also attempted to ship milk or cream instead of making butter.

Butter and Cheese Territories Divided.

Cheese production in Wisconsin is represented by two large districts. One in the southwestern portion of the state, with Green county, the home of the Swiss cheese, as a center, has a further extension of this industry into the adjoining counties. The other is the lake shore district of eastern Wisconsin. There is also an intermingling of both butter and cheese in the north central and northwestern portions of the state. The butter industry represents southeastern Wisconsin, or that portion of the state south of the eastern cheese territory and east of the southwestern cheese district and extending northward to and finally surrounding the mixed butter and cheese section of the north central part. It has almost an exclusive control of the western part of the state. With the development of northern Wisconsin, the butter territory will be enlarged.

The Creamery Industry.

During the past few years there has been a remarkable change in the character of the creamery industry of Wisconsin. Only a few years ago it was generally considered that nearly all of the butter was made in factories where nothing but whole milk was received. This condition has changed, until at the present time over 85 per cent of the butter is made in factories where either all, or a greater part of the butter fat is received in cream skimmed on the farm. In 1909 only six whole milk creameries were located north and west of a line drawn from Green Bay to the southwest corner of the state. This changing of the method of factory operation was the natural result of progress. Wisconsin Bulletin Number 140 on "Development of Factory Dairying in Wisconsin, 1906," referred to the several advantages of this system as: Time saved on hauling milk to the factory; better skim milk for feeding purposes; less danger of introducing contagious diseases, such as tuberculosis; and extension of the radius of a creamery's operation.

The hand separator system of factory operation made cream production possible in the less developed dairy sections of the state, but it also had an influence on the quality of the butter. The lowering of the quality of the butter made from cream skimmed on the farm

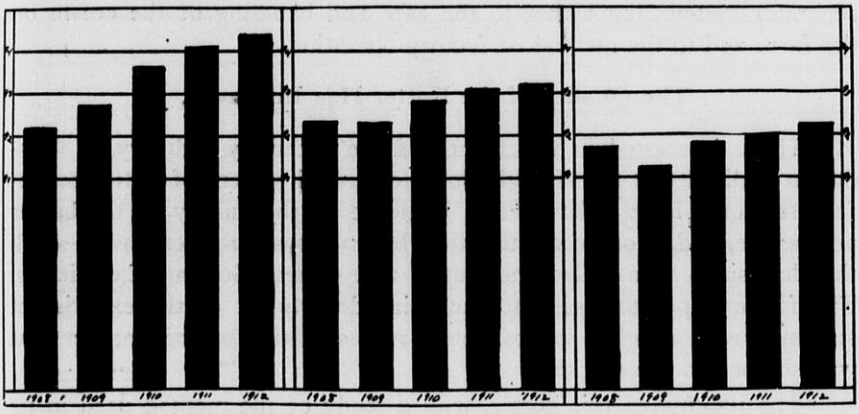


DIAGRAM 2—AVERAGE SCORE OF THE EXHIBITION BUTTER ACCORDING TO THE KIND OF RAW MATERIAL USED FOR A PERIOD OF FIVE YEARS. THE HEIGHT OF EACH BAR IN EACH SECTION INDICATES THE AVERAGE SCORE.

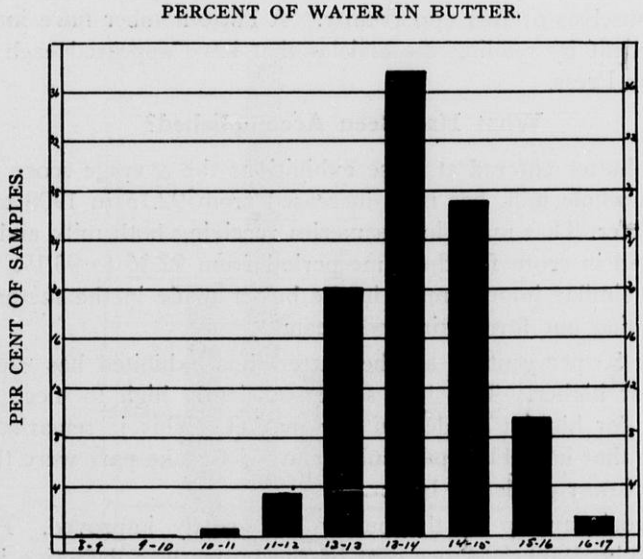


DIAGRAM 3—PERCENTAGE OF WATER IN 724 TUBS OF SCORING EXHIBITION BUTTER ENTERED MAY, 1911, TO APRIL, 1912. THE HEIGHT OF EACH BAR INDICATES THE PROPORTION OF THE BUTTER THAT CONTAIN'D THE SAME PER CENT OF WATER, ON THE DIVISION OF ONE PER CEN'

cannot be attributed to the method of skimming the milk nor the hand separator system, but rather to the care and handling of the cream on the farm and to the method of factory operation.

The Quality of the Butter Has Improved.

Those interested in the future of the creamery industry in Wisconsin realized that the changing of the general system of butter manufacture would have a detrimental influence on the quality of the butter as a whole, and to overcome this they began a system of extension work that has since been called the Butter and Cheese Scoring Exhibitions. The factory operators send to the dairy department of the experiment station once a month a tub of butter representative of the product that was shipped to the market.

The judging of this butter, with a study of the method used in its manufacture has furnished to those in charge of this work data for writing the individual men regarding necessary changes that had to be made in order that the quality of the butter produced in Wisconsin might remain high. Each year some 200 of the creamery men have directly availed themselves of this opportunity. A large number have indirectly received benefit by reading the articles that have appeared each month in the Dairy Press.

What Has Been Accomplished?

In the butter entered at these exhibitions the average score of that made from whole milk has been increased from 92.15 in 1908 to 94.35 five years later. That made in creameries receiving both milk and cream has increased in score for the same period from 92.36 to 93.19. There has been a similar improvement in the butter made in the factories receiving nothing but farm skimmed cream.

Nearly 50 per cent of all the butter thus exhibited has each year scored 93 or higher. This is a score sufficiently high to meet the requirements for highest grades on any market. This is remarkable because those that have been particularly urged to take part were the men making the lower grades of butter.

The workmanship of the butter has greatly improved. For example, in July, 1909, 59.4 per cent of the butter was defective in body and 20 per cent of the exhibits were cut in color. The following year only 8.5 per cent of the butter was cut in body and 3.6 per cent in color.

Of all the butter entered last year only 12.08 per cent of it was defective in body as compared with 34.18 per cent for the same period

PERCENT OF FAT IN BUTTER.

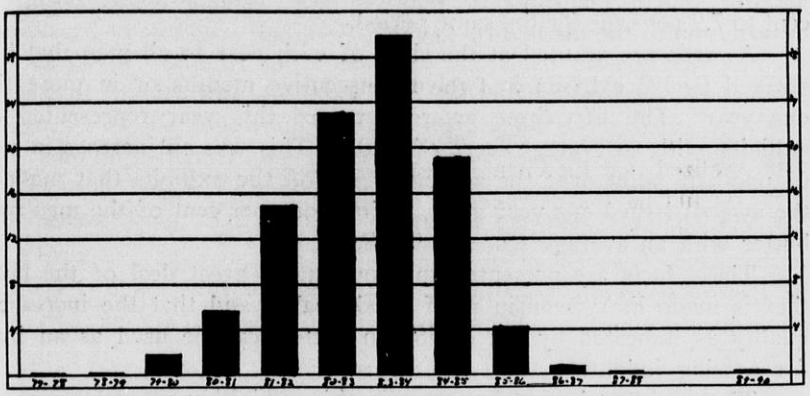


DIAGRAM 4—PERCENTAGE OF BUTTERFAT IN 724 TUBS OF SCORING EXHIBITION BUTTER ENTERED MAY, 1911, TO APRIL, 1912. THE HEIGHT OF EACH BAR INDICATES THE PROPORTION OF THE BUTTER THAT CONTAINED THE SAME PERCENT OF FAT, ON THE BASIS OF ONE PERCENT DIVISION.

PERCENT OF SALT IN BUTTER.

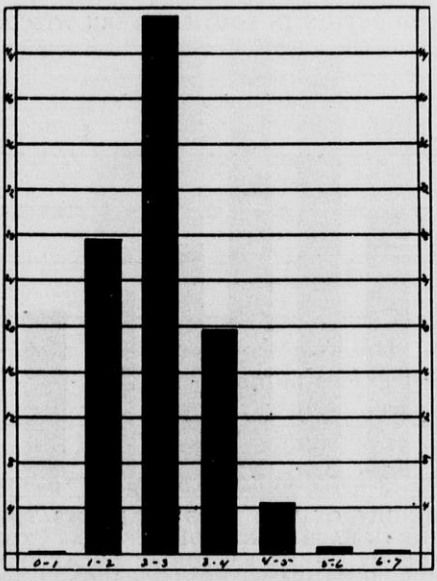


DIAGRAM 5—PERCENTAGE OF SALT IN 730 TUBS OF SCORING EXHIBITION BUTTER, ENTERED MAY, 1911, TO APRIL, 1912. THE HEIGHT OF EACH BAR INDICATES THE PROPORTION OF THE BUTTER THAT CONTAINED THE SAME PERCENT OF SALT ON THE DIVISION OF ONE PERCENT.

four years previous. With an improvement in color from 28.23 per cent to 7.9 per cent for the same period.

Awards are granted at the close of each year to all men that have entered twelve exhibits in twelve consecutive months or in more than one year. The fifty-three awards granted this year represented 636 exhibits, with an average score of 93.07. This was an increase in score of one-half point over the average score on the exhibits that made up the awards issued one year ago. Thirty-four per cent of the men made butter with an average score of 94.58.

These facts are presented to show that a great deal of the butter that is made in Wisconsin is of good quality and that the increase in quality as indicated by the exhibition butter, can be used as an index for passing judgment as to the future.

The men that have taken part in this exhibition work have always represented every creamery section of the state.

Wisconsin Butter of Uniform Composition.

The uniform quality of the butter made in a large number of creameries makes the surplus for the summer months desirable for

BUTTER PRODUCTION IN SOUTHEASTERN WISCONSIN 1911.

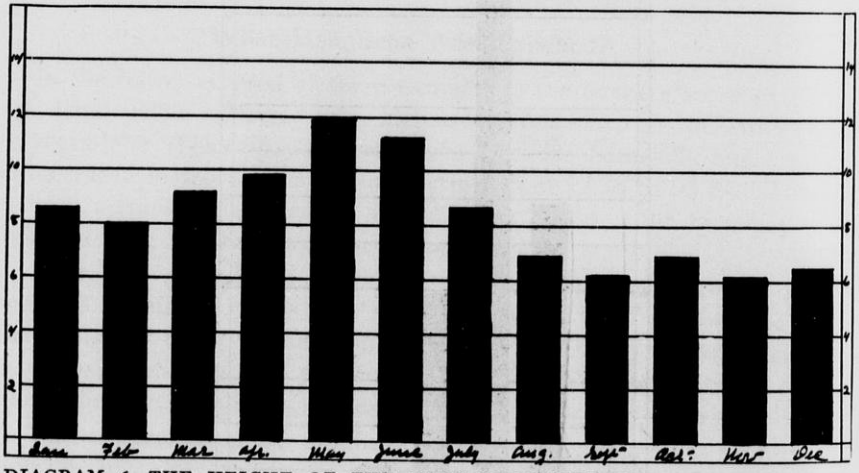


DIAGRAM 6—THE HEIGHT OF THE BARS INDICATES THE PROPORTION OF THE BUTTER MADE IN EACH MONTH OF THE YEAR. THIS CHART IS BASED ON THE AVERAGE OF THREE FACTORIES LOCATED IN SOUTHEASTERN WISCONSIN.

storage. What is true of the flavor of the butter is applicable to its per cent of water, fat and salt. These must be considered in market-

able butter, regardless of whether it is to be held or sold without being placed in storage. In 1910, 36.6 per cent of the 830 lots of butter made in 20 per cent of the creameries contained between 13 and 14 per cent of water, with 64.6 per cent containing between 13 and 15 per cent. For the following year the results were the same, 37.7 per cent of the butter containing between 13 and 14 per cent of water and 64.7 per cent between 13 and 15 per cent. The average for all the butter tested being 13.6 per cent water, 83 per cent fat, and 2.4 per cent salt.

Fifty-two per cent of the butter containing 82 to 84 per cent fat and 46 per cent containing 2 to 3 per cent of salt.

Butter Production and Its Relation to Storage.

The production of butter is not uniform throughout the year, the largest amount being produced in May, June, July and August. Since the consumption of butter is comparatively uniform throughout the year,

BUTTER PRODUCTION SOUTHWESTERN WISCONSIN 1911.

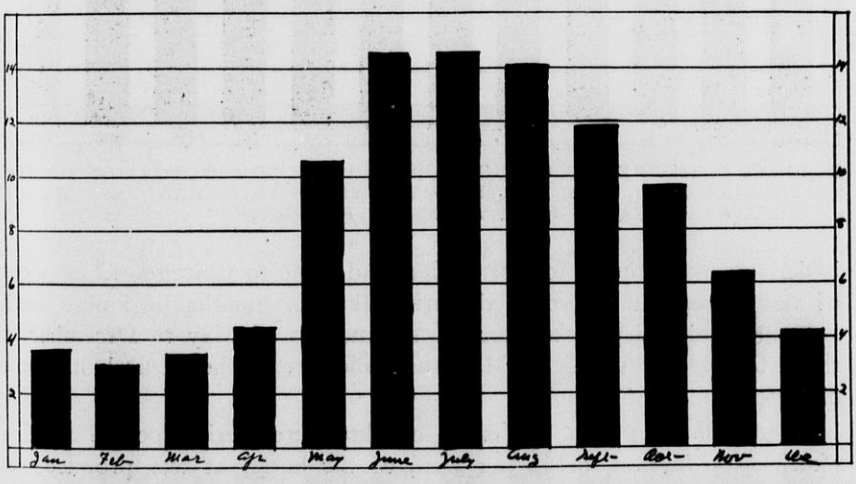


DIAGRAM 7—THE HEIGHT OF THE BARS INDICATE THE PROPORTION OF THE BUTTER MADE IN EACH MONTH OF THE YEAR. THIS CHART IS BASED ON THE AVERAGE OF THREE FACTORIES LOCATED IN GRANT COUNTY.

the over-production in summer must be stored in order that there may be a supply during the season of shortage. In the states where dairying is yet in its infancy, dairy butter is placed on the market during the summer months. This has a tendency to reduce the consumption of

creamery butter and thus increase the amount of butter that must be stored.

In the various creamery sections of Wisconsin the relative amount of butter produced each month during the year is not the same. This can in part be explained by the intensity of dairy farming. Southeastern Wisconsin, or that portion of the state where some of the milk

WISCONSIN BUTTER PRODUCTION 1911.

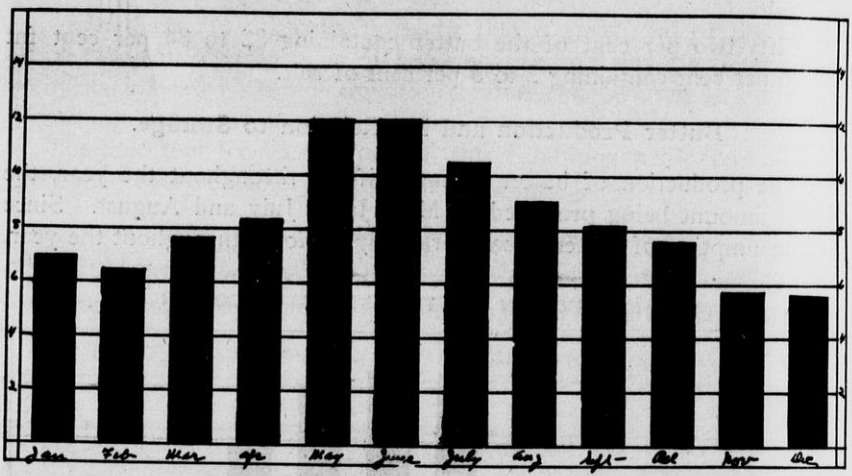


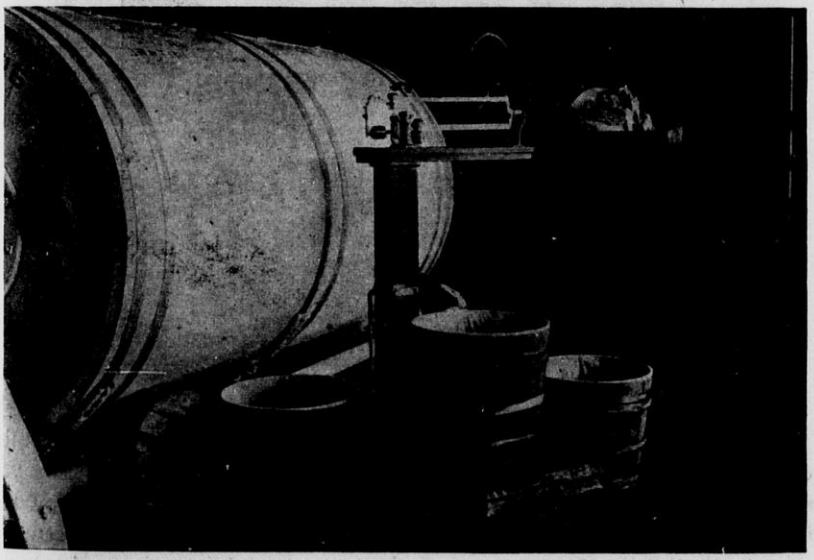
DIAGRAM 8—THE HEIGHT OF THE BARS INDICATE THE PROPORTION OF THE PRODUCT MADE EACH MONTH OF THE YEAR. THIS CHART IS BASED ON AN AVERAGE TAKEN FROM FOURTEEN FACTORIES.

is delivered or shipped to Milwaukee, and some to Chicago, 48 per cent of the butter fat is produced during the six months beginning with December and 52 per cent for the six months of May to December, a slight increase occurring in May and June due to the natural influence of pastures.

According to data furnished by three creameries located in this district, the highest, or 12 per cent, of the butterfat was produced in May, with a decline to 11.3 per cent for June, and the five months, August to January, varying from 6.1 per cent to 6.9 per cent, and gradually increasing to 9.8 per cent for April.

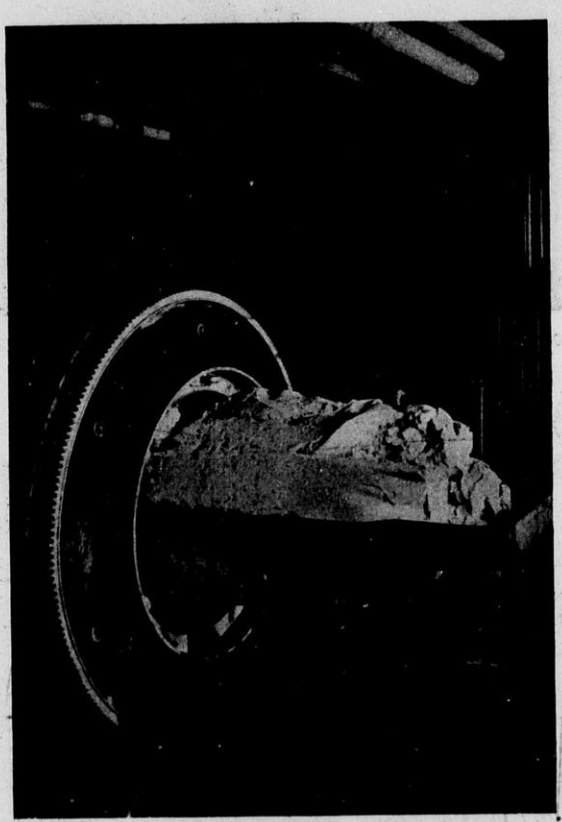
In the north central, northern and western part of the state more summer dairying is to be found because a larger portion of the land furnishes native pastures. In Bulletin 223, Wisconsin Experiment Station, the following statement appears: "Two-thirds to four-fifths of

1,700,000 OF THESE TUBS ARE FILLED WITH BUTTER EACH YEAR IN WISCONSIN.



THE NEATNESS OF THE TUBS BEFORE THEY ARE PACKED ADDS GREATLY TO THE APPEARANCE OF THE FINISHED PACKAGE.

the improved land in northern Wisconsin and the southern highlands is in pasture or meadow." In these same localities, especially southwestern Wisconsin, a large number of the farmers are interested in steer feeding and hog raising. This means summer milk production because the skim milk is wanted in early summer for the young growing hogs. The creameries located in the southwestern section reported that 57 per cent of the butter fat was produced during the four months, May, June,



READY TO BE PACKED.

July and August, and only 25 per cent for the six months, December to May 1st. Over one-fourth of the total production for the year occurred in June and July alone. Available data furnished by fourteen different creameries, including the six already referred to, seems to indicate that fully 25 per cent of the output of butter is made during the months of May and June, with 60.1 per cent for the six months from

April to November 1. The manager of one of the factories located in northern Wisconsin stated that over one-fourth of their output of 873,000 pounds for 1912 was made in May and June. These facts show that a great deal of the butter made during the summer months must be placed in cold storage warehouses.

The Advancement in Refrigerating Facilities Has Aided Wisconsin.

The remarkable advancement in the manufacture of butter and cheese in Wisconsin has been made possible only because refrigeration of food products has received due consideration. Without the refrigerator car it would be impossible to transport the product during the summer months, either for direct consumption or storage, in practically as good a condition as when it left the factory. The storage facilities have made it possible to hold Wisconsin's butter from four to eight months without impairing its quality to any great extent. The quality of the butter when taken out of storage has exerted an influence on the yearly average price of butter. This has indirectly encouraged dairying because the yearly advance of one cent in the price paid the producers per pound of butter fat nets the dairymen of Wisconsin $1,000,000.

The refrigerator in each factory where the daily make of butter is stored for the weekly or the bi-weekly shipments has become a necessity, and has reduced the danger of loss in quality caused by mold formation.

The dairy industry of Wisconsin has continued its increase since 1909 at the same rate as it did for the previous decade. With a 70.4 per cent increase in the output of butter for that period, what can be expected for the ten years, 1909 to 1919? All of the different factors that will continue to influence agricultural development will directly increase butter production. According to the last U. S. census, Wisconsin furnished all of the butter consumed by one-sixth of the nation's population, and it is not too much to expect that within the near future one-fifth to one-fourth of the butter made in the United States will bear the label, "Made in Wisconsin."