

MARKETING

OREGON BUTTER AND CHEESE

By G. H. WILSTER and
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Oregon State System of Higher Education
Federal Cooperative Extension Service
OREGON STATE COLLEGE
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FOREWORD

By P. M. BRANDT, Dairy Husbandman
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With the recent completion of ten years' work on a carefully planned program to improve the quality and better the marketability of Oregon's dairy products, particularly butter and cheese, and the development of higher standards during this period, it became apparent that it was desirable to revise the program, basing such a revision on the higher standards that had been reached.

Proper analysis of progress, however, could not be made without giving full consideration to the conditions that existed prior to the inauguration of the quality-improvement program just completed. Because of the importance of this historical background, when considered with the accomplishments of the ten-year period, it seemed desirable to bring this information together as a prelude to the inauguration of the future program for quality improvement and market development. This will be a living, flexible program based on past experience, current conditions, and progressive revision as the dairy industry develops. This publication, then, in itself constitutes both an historical and progress report and a projected plan for the future. It is one of several that have been issued on various phases of marketing Oregon's dairy products.

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TABLE OF CONTENTS

	Page
Introduction	5
The Dairy Products Quality Improvement Program.....	7
Economic Importance of the Oregon Dairy Industry.....	8
Oregon's Dairy Sections	10
Production of Market Milk and Milk Products in 1938.....	11
Marketing Problems During the Period 1919 to 1927.....	14
1. A Survey of Creamery Operation.....	14
2. Dairy Improvement Program Launched.....	14
3. Agricultural Economic Conference	15
4. County Agricultural Economic Conferences.....	15
5. A Survey of Marketing Problems of Oregon Creameries.....	16
Early Steps Toward Quality Improvement.....	18
1. A Study of the Factors that Influence Butter Quality.....	18
2. Convention for Revision of Oregon's Dairy Program.....	20
3. Federal Grading of Butter Inaugurated.....	21
4. The Dairy Demonstration Train.....	21
The Butter Quality Improvement Program.....	23
1. Oregon State College Monthly Butter Scoring and Analysis Service	23
2. Establishment of Grades and Standards for Milk, Cream, and Butter	32
3. Quality Improvement Meetings	34
4. The Milk, Cream, and Butter Grading Law.....	35
5. Manufacturing Grades of Milk and Cream.....	38
6. Consumer Grades of Butter.....	39
<i>A</i> Grade Butter	39
<i>B</i> Grade Butter	39
<i>C</i> Grade Butter	39
Unlawful Butter	40
7. Milk, Cream, and Butter Grading Schools and Examinations.....	40
8. Rules for the Manufacture of Butter.....	40
9. Licensing of Butter and Cheese Makers.....	41
Market Development Activities.....	41
1. The State Department of Agriculture.....	41
2. The Oregon Dairymen's Association.....	43
3. The Oregon Dairy Manufacturers' Association.....	43
4. College Participation in National Butter Scoring Contests.....	44
5. Butter Improvement and Standardization Work With Interstate Associated Creameries	44
6. Improvement Work With Other Creameries.....	45
The Cheese Quality Improvement Program.....	46
1. Monthly Cheese Scoring Service.....	46
2. Additional Cheese Improvement.....	47
Promotion of the Sale of Dairy Products.....	49
1. Need of Advertising.....	49
2. Oregon Dairy Council.....	50
Marketing Oregon's Butter and Cheese in the Future.....	51
1. Continuation of Quality Improvement Program.....	51
2. Increased Production and Out-of-State Sales of Dairy Products.....	51
A Program for the Future.....	56

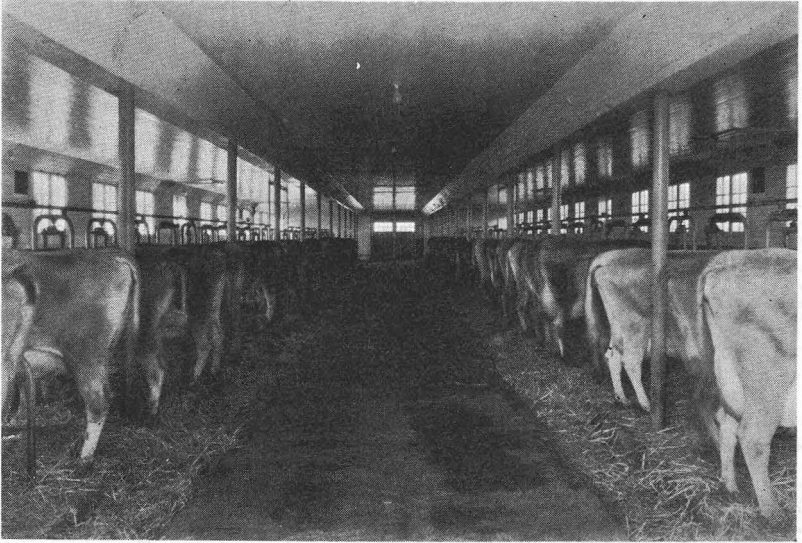


Figure 1. Successful marketing begins with the production of clean milk.

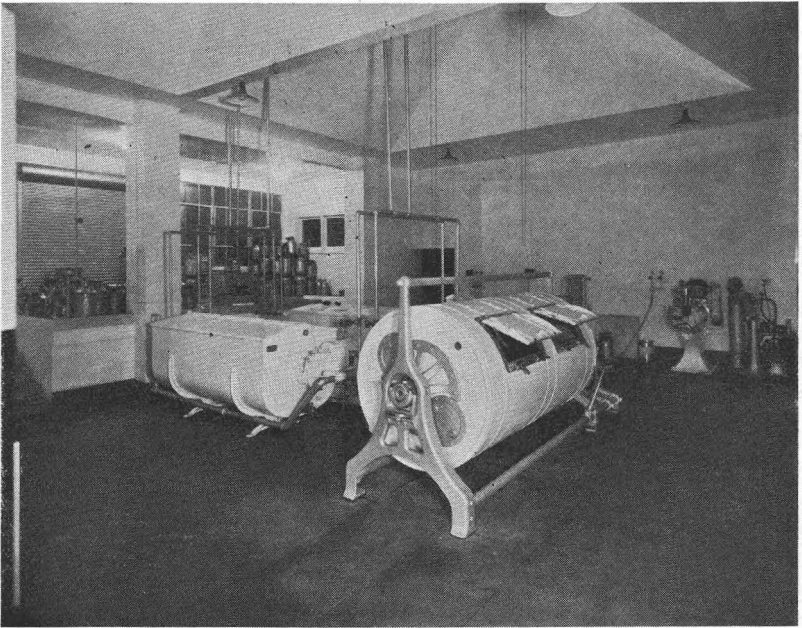


Figure 2. Sanitation of creameries is fundamental in the marketing of butter.

Marketing Oregon Butter and Cheese

By

G. H. WILSTER, Professor of Dairy Manufacturing
PAUL CARPENTER, Extension Agricultural Economist (Marketing).

INTRODUCTION

The marketing of Oregon's butter and cheese was not of major importance at the beginning of the present century. Oregon at that time did not produce enough dairy products for its own use. Most of the butter and a considerable portion of the cheese produced were made on the farm.

In 1899, 418,000,000 pounds of milk were produced.* The population of Oregon in 1900 was 413,536.† The number of dairy cows two years old and over on July 1, 1900, was 122,447.* A total of 8,107,450 pounds of farm butter and 467,256 pounds of farm cheese was made in 1899.* In addition, 54 creameries made 1,631,134 pounds of butter and about 30 cheese factories made 1,115,016 pounds of cheese.‡ Coos County led in the production of creamery butter with 399,560 pounds, and Tillamook County led in the production of factory cheese with 701,187 pounds.

Contrast these figures with those for 1938. Milk production was three times as large in 1938 as in 1899, and Oregon dairy plants reported handling 207,023,947 pounds of market milk, 31,205,111 pounds of butter, 19,598,951 pounds of cheese and, in addition, large quantities of condensed milk, ice cream, and dry milk, products which were not even manufactured on a commercial scale at the beginning of the century.

The creameries and cheese factories 40 years ago were small. A number received milk or cream from only one, two, or three dairy herds. The largest number of farms supplying a creamery in 1899 was 100, and for a cheese factory, only 30. The total value of dairy products consumed on farms, and milk, cream, butter, and cheese sold by farmers in 1899 was \$5,095,507.

Dairy products were being shipped into Oregon from other states and from Canada and New Zealand during the years following the turn of the century. Records show that during the years 1899-1900 from 14,000 to 16,000 cases of condensed milk were brought

The authors gratefully acknowledge the helpful suggestions made by Professors P. M. Brandt, E. L. Potter, R. W. Morse, and J. M. Clifford.

* United States Census, 1900.

† The Oregon Blue Book, 1937-1938.

‡ Kent, F. L. *Creameries and Cheese Factories of Western Oregon*, Oregon Agr. Exp. Sta. Bul. 65, 1901.

into the state annually.* It was reported that much of this milk was produced in Southern California. Oregon at times shipped out feed for the dairy cows in that section. The first condenseries were built in 1902.† In the report of the Dairy and Food Commissioner for 1909‡ it was stated that bacon, dressed poultry, butter, and eggs valued at nearly \$1,000,000 were shipped into Portland from outside states. This was presumably in one year. Butter amounted to 15 carloads, or 360,000 pounds. A total of 5,667,964 pounds of farm butter was made in 1909.§

In 1910, consumption of butterfat in the state exceeded production by four million pounds.|| During 1913 a total of 120,000 pounds of butter was received from New Zealand.¶ In the Eleventh Biennial Report, J. D. Mickle, Oregon Dairy and Food Commissioner, discussed the future of Oregon's dairy industry. At that time (September 30, 1916) dairy leaders were wondering if production would ever reach a point where it would exceed the demand, and people were asking: "What is to be the future of the dairy industry?" Mr. Mickle felt that with modern methods of preparing and preserving dairy products new avenues of marketing would be opened up and these would take care of the increased production.

It appears that consumption balanced production during 1917 to 1919. By 1920, production had increased to the extent that it exceeded consumption by 2½ million pounds. Dairy leaders then decided that the problem of the Oregon dairy industry was one of marketing its surplus products in outside markets.

What is "marketing?"

When we speak of "marketing" we usually think of the selling of the individually packaged, either unprocessed or processed, products. This would mean delivering bottles of milk direct to the consumer, packages of butter and cheese to a retail store, cans of ice cream to a restaurant or soda fountain, or it would mean selling larger quantities of butter, cheese, or condensed milk at wholesale either in the state or in another state.

In its broader sense, "marketing" as here used means the handling and transferring of agricultural products to the ultimate purchaser. Thus in the case of milk, marketing begins with the handling of the raw material, and it includes all the services that enter into

* Third Biennial Report of the Dairy and Food Commissioner of Oregon, 1901.

† Fourth Biennial Report of the Dairy and Food Commissioner of Oregon, 1903.

‡ Seventh Biennial Report of the Dairy and Food Commissioner of Oregon, 1909.

§ United States Census, 1910.

|| Report of Oregon Agricultural Economic Conference, Oregon State College, 1924.

¶ Tenth Biennial Report of the Dairy and Food Commissioner of Oregon, 1915.

the transferring of the producer's milk, in the final form of packaged dairy products, to the consumer.*

Quality important

Of paramount importance in the marketing of dairy products is the quality. This was recognized even before Oregon produced dairy products in excess of her own needs. J. W. Bailey, State Dairy and Food Commissioner, in his report to the State Legislature in 1909† stated that if outside competition was to be excluded and a high price for butter maintained, quality was essential. "If we would build up a market against that day, sure to come," he warned, "when Oregon will produce dairy products far in excess of her own consumption, we must have quality."

It was only ten years after Mr. Bailey made this statement that Oregon produced an excess of dairy products and had to find markets for its surplus products in other states.

THE DAIRY PRODUCTS QUALITY IMPROVEMENT PROGRAM

For twenty years members of the staff of the Oregon State College have systematically worked on methods for the improvement of Oregon's dairy products. The early work was stimulated by shipments to out-of-state markets where the demand was for butter and cheese of the highest quality. Volume shipments of these two products began about 1921. In that year, of the total of 19,600,000 pounds of creamery butter manufactured, 600,000 pounds were received at San Francisco. Of the 10,100,000 pounds of cheese manufactured, 2,200,000 pounds were marketed in San Francisco. Additional butter and cheese were sold on the Los Angeles market. For the year 1938, a total of 31,205,111 pounds of butter was made in 95 creameries, and 19,598,951 pounds of whole milk Cheddar cheese were made in 49 cheese factories.‡ Receipts of butter and cheese in San Francisco and Los Angeles from Oregon during 1938§ were 9,837,346 pounds of butter and 11,577,065 pounds of cheese. In addition to this, it is estimated that 2,000,000 pounds of butter and 3,000,000 pounds of cheese were shipped to other states.

* For a definition of marketing, See *Encyclopedia Britannica*, 14th edition, and also Clark, F. E., "Principles of Marketing," published by the Macmillan Company, New York City, N. Y.

† Seventh Biennial Report of Dairy and Food Commissioner of Oregon, 1909.

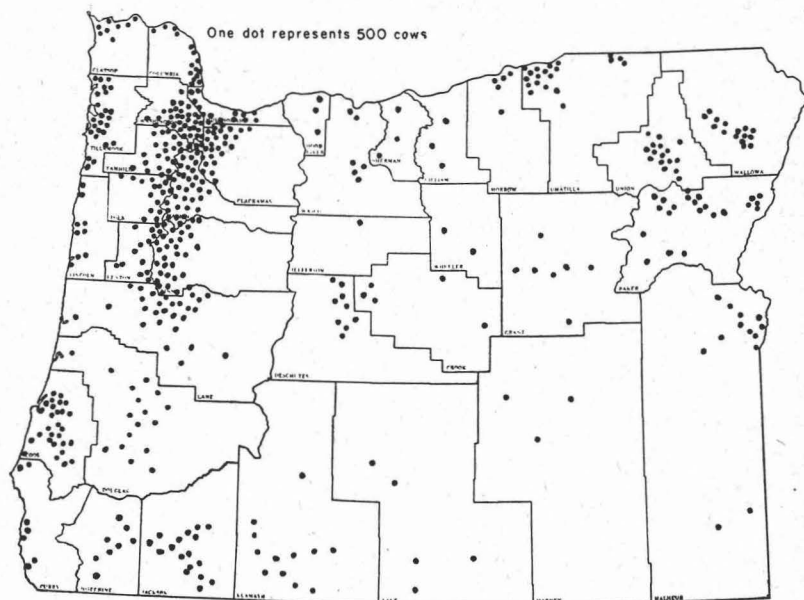
‡ United States Department of Agriculture Marketing Service and Oregon State Department of Agriculture.

§ United States Department of Agriculture.

ECONOMIC IMPORTANCE OF THE OREGON DAIRY INDUSTRY

The dairy industry is the largest cash-income producer for Oregon farmers. Cows are kept on three-fourths, or about 50,000, of the farms of the state.

COWS KEPT FOR MILK PRODUCTION IN OREGON



SOURCE: U. S. CENSUS, 1935

Figure 3. A total of 250,573 cows was milked in Oregon in 1934.

TOTAL FARM CASH INCOME FROM MILK PRODUCTION

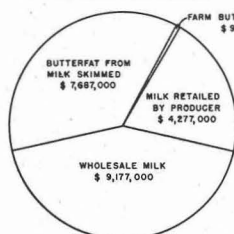


Figure 4. Disposition of the milk produced in Oregon in 1936.
Source: United States Department of Agriculture.

TOTAL CASH INCOME FROM FARM PRODUCTION

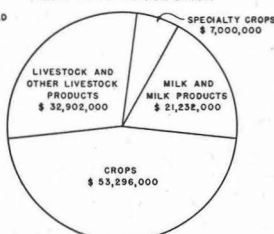


Figure 5. The total farm cash income from milk production in Oregon in 1936 was \$21,232,000.
Source: United States Department of Agriculture.

DISPOSITION OF OREGON'S 1,333,000,000 POUNDS OF MILK

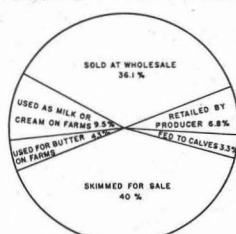


Figure 6. The total cash income from farm production in Oregon in 1936 was \$114,430,000.
Source: Federal Cooperative Extension Service, Oregon State College.

OREGON MILK PRODUCTION 1936*

<i>Source of Milk</i>	
Number cows milked	246,000
Pounds milk produced	1,333,000,000
Milk production per cow, pounds	5,420
Average per cent fat in milk	4.3
Total pounds fat produced	57,000,000

<i>Disposition of Milk</i>		<i>Pounds of Milk</i>
Used as milk or cream on farms		126,000,000
Used for butter on farms		57,000,000
Fed to calves		44,000,000
Skimmed for sale as butterfat		532,000,000
Retailed by producer		91,000,000
Sold at wholesale		483,000,000
TOTAL		1,333,000,000

<i>Cash Income from Dairy Sales</i>		
	<i>Pounds</i>	<i>Value</i>
Milk retailed by producer	91,000,000	\$ 4,277,000
Wholesale milk	483,000,000	9,177,000
Butterfat from milk skimmed	22,610,000	7,687,000
Farm butter sold	260,000	91,000
Total cash income (1,111,000,000 pounds of milk)		\$21,232,000
Gross income from milk (Cash income plus value of milk, cream and butter consumed on farms, \$21,232,000 + \$3,388,000)		\$24,620,000
Total farm value of milk produced (Gross income plus value of milk fed to calves, \$24,620,000 + \$840,000)		\$25,460,000

Of the quantity of milk produced in 1936, 752,981,000 pounds were used for dairy products manufactured in factories.† Of this amount, 550,000,000 pounds were used for butter.‡

Comparison of the above figures with the following data on total farm income for the same period shows that dairying brings in about one-fifth of the total cash farm income and is therefore a major enterprise in Oregon.

TOTAL CASH INCOME FROM ALL FARM PRODUCTS, 1936§

Crops sold	\$ 53,296,000
Livestock and livestock products sold (Including Dairy)	\$ 54,134,000
	\$107,430,000
Specialty crops sold	7,000,000
Total farm income, including dairy	\$114,430,000

* Agricultural Statistics, United States Department of Agriculture, 1938.

† United States Department of Agriculture, *Dairy Products Manufactured in Factories*.

‡ Based on butter containing 80.5 per cent fat and milk containing 4.3 per cent fat.

§ Data by H. H. White, Associate Extension Economist, Oregon State College.

OREGON'S DAIRY SECTIONS

There are three definite sections in Oregon with distinctly different types of agriculture and climate; namely, the coast section, the Willamette Valley and Umpqua Valley section, and the eastern Oregon and Rogue River Valley section. All three sections comply to a greater or less extent with the requirements as to suitability for dairying. The climate, water supply, temperature, feed, etc., are such that the agriculturally adapted areas of Oregon are well suited for dairying. Each of the three sections have some shortcomings. The coast section has an abundance of native pasture for about seven or eight months of the year, but because of the heavy and persistent rainfall the growing and harvesting of hay and grain crops are extremely difficult. In the Willamette and Umpqua Valley section the pasture season is relatively short. Some lands lack fertility on account of many years of continuous grain cropping. These limitations are being gradually overcome by the introduction of irrigation during the dry summer months and by improving the fertility of run-down soils through rotation of crops and application of manure and fertilizers. In parts of the eastern and southern Oregon sections concentrated feedstuffs are not as abundant as in the Willamette Valley. Some sections have a limited amount of water for irrigation and the water is sometimes too warm, especially during the summer months, for efficient cooling of the milk and cream produced. Further development of irrigation projects, the economical growing of more hay crops, and introduction of artificial cooling are some of the problems for the future in these sections.

Dairying is important in Oregon agriculture because :

1. Over a large part of Oregon's tillable area, soil and climatic conditions are such as to be better adapted to the growing of dairy feed, such as hay, grain, and grass, than to other crops.
2. The farms in many of these areas are relatively small, which in turn means a relatively large amount of man power. This man power is generally intelligent and industrious, and must find employment. Dairying offers opportunity for its profitable employment.
3. Oregon's geographic location is a long distance from most of the large centers of food consumption, so that the farm products must be shipped long distances at considerable expense. Dairying reduces the products of the farm to the least possible bulk and weight, and thereby minimizes transportation costs.

These three basic conditions exist over most of the humid and irrigated farming sections of the state, and as long as these conditions continue to exist dairying will be a major enterprise in Oregon.

PRODUCTION OF MARKET MILK AND MILK PRODUCTS IN 1938

In Table 1 and Figure 7 are shown the amount of milk sold in the 36 counties of Oregon in 1938. It should be noted that almost one-half of the milk was sold in Multnomah County, which has the largest population.

In addition to the 206,220,844.8 pounds of market milk produced in the state, 803,102.4 pounds were received from Washington. This brings the total amount of milk consumed in cities to 207,023,947.2 pounds, or 24,072,552 gallons. This milk contained 8,280,958 pounds of fat.

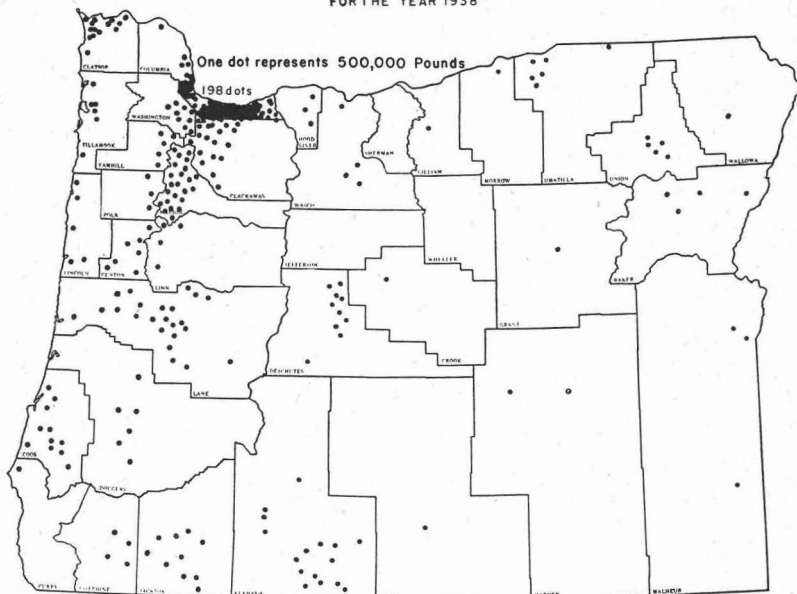
It is estimated by the Oregon Milk Control Board that the daily consumption of 4-per-cent milk per person in Oregon in 1938 was 0.78785 pint.

Table 1. SALES OF MARKET MILK AND CREAM ON WHOLE MILK BASIS, IN OREGON, BY COUNTIES, FOR THE YEAR 1938.*

County	4% milk	4% milk	Fat
	<i>Gallons</i>	<i>Pounds</i>	<i>Pounds</i>
Baker	243,093	2,090,599.8	83,624
Benton	432,872	3,722,699.2	148,908
Clackamas	967,134	8,317,352.4	332,694
Clatsop	835,750	7,187,450.0	287,498
Columbia	356,378	3,064,850.8	122,594
Coos	656,006	5,641,651.6	225,666
Crook	60,267	518,296.2	20,732
Curry	55,471	477,050.6	19,082
Deschutes	580,773	4,994,647.8	199,786
Douglas	351,372	3,021,799.2	120,872
Gilliam	56,360	484,696.0	19,388
Grant	56,570	486,502.0	19,460
Harney	97,378	837,450.8	33,498
Hood River	161,279	1,386,999.4	55,480
Jackson	607,686	5,226,099.6	209,044
Jefferson	15,105	129,903.0	5,196
Josephine	220,895	1,899,697.0	75,988
Klamath	906,186	7,793,199.6	311,728
Lake	84,459	726,347.4	29,054
Lane	1,314,523	11,304,897.8	452,196
Lincoln	282,779	2,431,899.4	97,276
Linn	254,064	2,184,950.4	87,398
Malheur	157,791	1,357,002.6	54,280
Marion	1,343,070	11,550,402.0	462,016
Morrow	39,488	339,596.8	13,584
Multnomah	11,533,232	99,185,795.2	3,967,432
Polk	169,988	1,461,896.8	58,476
Sherman	20,692	177,951.2	7,118
Tillamook	328,512	2,825,203.2	113,008
Umatilla	366,657	3,153,250.2	126,130
Union	295,593	2,542,099.8	101,684
Wallowa	44,785	385,151.0	15,406
Wasco	219,721	1,889,600.6	75,584
Washington	517,884	4,453,802.4	178,152
Wheeler	28,082	241,505.2	9,660
Yamhill	317,273	2,728,547.8	109,142
TOTAL, OREGON.....	23,979,168	206,220,844.8	8,248,834
From State of Washington.....	93,384	803,102.4	32,124
Total Oregon consumption.....	24,072,552	207,023,947.2	8,280,958

* Adams, Paul C., Oregon Milk Control Board.

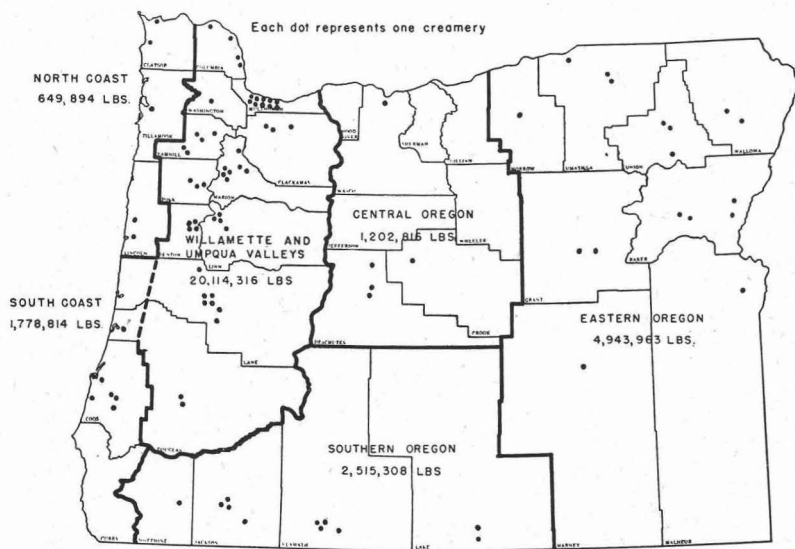
SALES OF MILK IN OREGON ON THE WHOLE MILK BASIS
FOR THE YEAR 1938 *



*SOURCE OREGON MILK CONTROL BOARD

Figure 7. Total market milk produced in Oregon 206,220,844 pounds; received from Washington 803,102 pounds.

DISTRIBUTION OF BUTTER PRODUCTION IN OREGON



DATA U S DEPARTMENT OF AGRICULTURE AND OREGON STATE DEPARTMENT OF AGRICULTURE

Figure 8. Ninety-five creameries produced 31,205,111 pounds butter in 1938.

DAIRY PRODUCTS MANUFACTURED IN 1938*

Creamery butter	31,205,111	pounds
Cheddar cheese—whole milk	19,598,951	"
Cheddar cheese—part skim milk	312,804	"
Cheddar cheese—full skim milk	31,188	"
Cottage, pot, and baker's cheese	1,635,109	"
Cream cheese—uncured	190,073	"
Swiss cheese	217,388	"
Miscellaneous cheese	5,850	"
Dried casein	191,515	"
Dried powdered skim milk—animal feed	3,591,965	"
Dried powdered skim milk—human food	3,630,761	"
Unsweetened condensed skim milk—bulk	1,508,450	"
Evaporated unsweetened whole milk—case goods	31,649,139	"
Sweetened condensed milk—bulk goods—skimmed	241,854	"
Dried buttermilk	269,406	"
Dried whey	6,416,260	"
Ice cream—factory	2,081,178	gallons
Ice cream—counter freezer	294,746	"
Sherbets	63,925	"

In 1934† 3,328,000 pounds of butter were made on farms. It is estimated that approximately 3,000,000 pounds were made on farms in 1938.

DISTRIBUTION OF CHEESE PRODUCTION IN OREGON

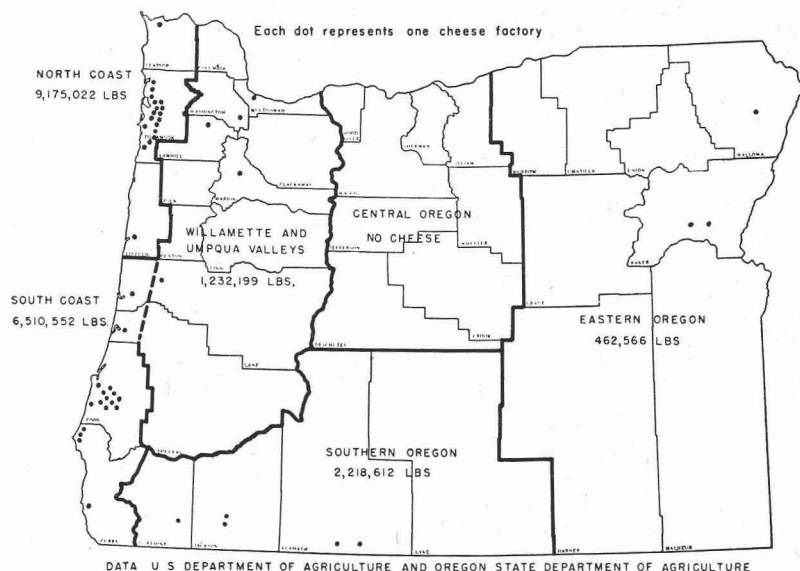


Figure 9. Forty-nine cheese factories produced 19,598,951 pounds whole milk Cheddar cheese in 1938.

* United States Department of Agriculture, Marketing Service, and Oregon State Department of Agriculture.

† United States Census, 1935.

MARKETING PROBLEMS DURING THE PERIOD 1919 TO 1927

1. A survey of creamery operation

The first important investigation of factors in manufacturing and marketing dairy products was an economic study in 1919 by the Oregon Agricultural Experiment Station of 17 Oregon creameries.* During the course of the study it was brought out that the most successful of the creameries were those that had a large volume of business. The subject of quality and the influence of quality on the success of the business was not included in the study. Quality perhaps was of minor consideration in those days. This was before the introduction of State and Federal standards and consumer grades. In the report of the study, reference to quality was made only once. It was stated that, "It is quite as necessary for a small creamery as for a large one to have a good buttermaker. Otherwise the quality of the butter will not be up to standard. . . ."

2. Dairy improvement program launched

The first step to launch a program for improvement in the quality of dairy products was in 1923. This was part of a general agricultural program for Oregon developed over a period of years by the Extension Service of Oregon State College.† The general program was the outgrowth of numerous conferences of specialists of the Agricultural Experiment Station and Extension Service.

Among the recommendations made in the original proposal was one that *the dairy industry should be made the basis around which Oregon's diversified farming system be developed.*

It was pointed out that if dairying were to occupy the important place suggested, it was necessary to consider the things required to be done in order to consummate the goal. Improvement in the quality of dairy products, beginning with correct methods of producing milk and cream on the farms, was felt to be an all-important matter. It was recognized that outside markets were not open on salable terms to Oregon dairy products except when these products compared favorably in quality with those of other surplus-producing regions. Paying for cream in accordance with its quality was deemed of utmost importance. Other factors mentioned that should receive attention were better marketing facilities, herd improvement work, more economical management of dairy farms, disease-control work, and improvement of pastures.

* Englund, Eric, *Survey of Typical Oregon Farmers' Creameries*, Oregon Agr. Exp. Sta. Bul. 168, 1920.

† Maris, Paul V., *An Agricultural Program for Oregon*, Oregon Agr. Ext. Service Bul. 367, 1923.

3. Agricultural Economic Conference

In January 1924 a conference of agricultural leaders of Oregon was held at Corvallis, to consider the general agricultural program tentatively proposed by the Extension Service in 1923. Of the 540 delegates who attended the conference, three-fifths were representative farmers. Others were business and professional men.

Marshall N. Dana, associate editor of *The Oregon Journal*, was chairman of the conference.

The general conference approved, among others, the following recommendations of the dairy committee.*

"1. Butter manufacture should receive first consideration in improving dairy conditions in the state and taking care of the increasing surplus.

"2. Quality of products must be emphasized and to this end an adequate system of cream grading should be rigidly enforced. The carrying out of this plan should be given general public support and necessary assistance should be granted to the proper legal authorities."

It was brought out at the conference that the chief problem of the dairy industry was that of marketing its surplus products in out-of-state markets. Attention was called to the annual increase, at that time, of almost 5 per cent, in the production of butterfat. Whereas in 1910 consumption of butterfat in the state exceeded production by 4 million pounds, in 1920 production exceeded consumption by $2\frac{1}{4}$ million pounds.

4. County agricultural economic conferences

Following the general economic conference at Corvallis, county economic conferences were held during 1924 to 1927 in most of the counties of the state, at which the recommendations of the College, as confirmed by the general conference, were applied specifically to local conditions, and working programs for the counties were adopted.

After working under this program for almost ten years, a series of county agricultural outlook conferences was held in 1936. These again went on record in favor of improvement in the quality of milk and cream produced, the purchase of milk and cream by creameries on a graded basis, and continued improvement in the quality of the manufactured products.

The results of the outlook conferences were consolidated and coordinated with the program of the Agricultural Conservation Service in a further series of county conferences in 1938-39.

* Report of Oregon Agricultural Economic Conference, January 23-25, 1924, Oregon State College, pages 5 and 6.

5. A survey of marketing problems of Oregon creameries

There was almost continuous dissatisfaction with the marketing conditions for butter for several years prior to 1926, but the necessary facts on which to base definite recommendations for correcting the situation were lacking. A survey of the marketing problems that confronted the creameries therefore was made by the Oregon Agricultural Experiment Station in cooperation with the United States Department of Agriculture. A report of the work, together with some recommendations, was published in the form of an Experiment Station circular.*

Practically every creamery of importance in the state was visited by the investigators. The markets of Los Angeles, San Francisco, Seattle, and Spokane were studied. Nearly all jobbers and wholesalers in Portland were interviewed.

The butter industry at that time was the most important phase of the state's dairy business. Of the 940,000,000 pounds of milk produced, 400,000,000 pounds were used for butter.

The investigators made a study of the quality of the cream that was purchased by the creameries and also studied the quality of market samples of butter. They observed that,

"Practically every creamery in the state is confronted with acute marketing problems. Each creamery is attempting to sell its own products independently of the others; therefore, there are about as many competitors as there are creameries in operation. Even with so large a number of creameries there is greater uniformity in the method of marketing than would ordinarily be expected. The most serious difficulty is with the quality of the product which they have to market, since there is a wide variation in its quality. Butter scoring from 83 to 93 points is being offered for sale in various markets of the state and the common criticism of the wholesalers and jobbers in the largest central market in the state, Portland, was that the butter sent them by the various creameries varied so much in quality and quantity, one shipment with another, that it was practically impossible to build up any regular trade on the product received from the different creameries. As a consequence it was necessary for them to determine the quality of each lot of butter received and try to dispose of it to a particular trade that required that grade of butter. Thus a consumer would get the butter from a certain creamery one time and possibly from another the next. The better way, of course, would be for the

* James, D. L., and Jamison, N. C., *A Survey of Marketing Problems Confronting Oregon Creameries*, Oregon Agr. Exp. Sta. Circular 74, 1926.

creameries to furnish a uniform quality regularly, thus making it possible to build up a regular trade with the consumers."

James and Jamison sponsored a scoring of 56 samples of commercial butter.

The following is a frequency distribution of the scores:

	<i>Percentage of all samples</i>
92 score and above.....	5.3
91 to 92 score	7.1
90 to 91 score	18.0
83 to 90 score	69.6

In the summary of the report, the investigators stated:

"The trend of the consumer demand is for higher quality butter. The increasing demand for better quality butter is recognized by most creameries. * * * * *

"The future success of Oregon's dairy industry depends upon united action within the industry in improving the quality of butter and the correction and elimination of present evils existing in the purchase of raw materials and group action in the marketing of the manufactured product."

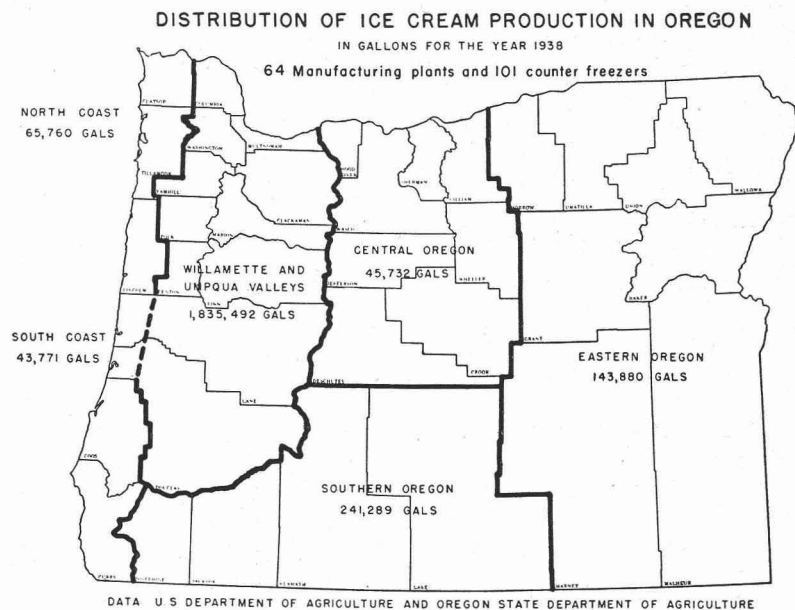


Figure 10. Total production of ice cream in Oregon in 1938 was 2,375,924 gallons.

EARLY STEPS TOWARD QUALITY IMPROVEMENT

1. A study of the factors that influence butter quality

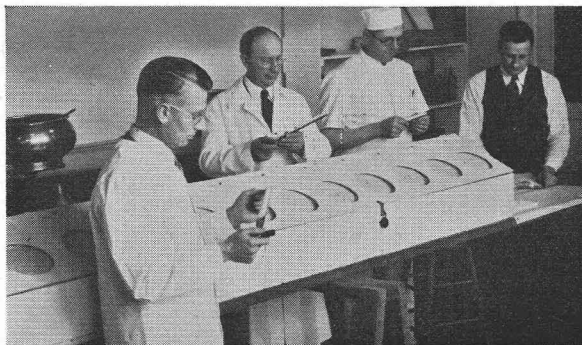
Larger amounts of butter were being shipped to California, but the bulk of the butter was still being sold within the state. The butter sold in the state, whether in cubes on the Portland market or in prints, was not subjected to any Federal Government or State inspection as to quality. So long as the dealers and consumers could be satisfied as to quality, price, and uniformity, such as in color and salt content, there was apparently no great demand for any Federal or State regulation and supervision of market grades.

Reports were received from California, however, that a large percentage of the butter received from Oregon was of a mediocre quality and some of it was very poor. It was not of the quality demanded on that market. During 1927, 3,000,000 pounds and during 1928, 2,300,000 pounds of butter were received in Los Angeles and San Francisco from Oregon.

Because of the general knowledge that butter made in Oregon was poor—the James-Jamison survey brought this out—and because of a demand in California for 92- to 93- score quality butter, which Oregon was not able to supply, another study of conditions in the butter industry in the state was initiated. This study, which lasted for one year, included:

- (1) The factors that had a bearing on the quality of the butter made in Oregon.
- (2) The possibility of making higher grades under the conditions that existed.
- (3) The changes that would be necessary in order to make higher and more uniform grades of butter.

The United States Department of Agriculture cooperated in



the study by furnishing the services of a technically trained specialist. The survey began in July 1928. A report of the work was published in a bulletin by the Agricultural Experiment Station.*

Figure 11. Butter is scored for flavor, body and texture, color, and salt content.

* Larrabee, E. S., and Wilster, G. H., *The Butter Industry of Oregon—A study of factors relating to the quality of butter*. Oregon Agr. Exp. Sta. Bulletin 258, 1929.

Specific information regarding the quality of the butter received at San Francisco from Oregon was obtained from F. H. McCampbell, the Federal butter grader stationed at that point, who stated that of the butter received on that market from Oregon in 1927 only 10 per cent scored 92. In 1928, he reported the scores of butter received were as follows:

	<i>Percentage of all</i>
92 score and above	35 per cent
91 score	25 per cent
90 score	26 per cent
Below 90 score	14 per cent

During 1928 the difference in price on the San Francisco market between 92- and 90-score butter was 1.64 cents a pound.

A study of the quality of the butter sold locally was also made. During January and February 1929, competent judges scored 104 samples of supposedly first-grade butter, of which 38 were purchased in Portland retail stores and the remainder were sent by creameries to Corvallis.

The scores of this butter ranged from 87 to 93 and averaged 90.3. A frequency distribution of this scoring is given below:

104 Samples Commercial Butter

	<i>Percentage of all</i>
92 and above	9.6 per cent
91 to 92	29.8 per cent
90 to 91	39.4 per cent
Below 90	21.2 per cent

In comparison, the scores from California were somewhat higher than the local scores. Evidently a greater percentage of butter of the higher grade was sold in California than in Oregon.

In the field study where detailed observations of the quality of cream received, cream grading, methods of manufacturing, and other factors were made, it was found that a considerable variation existed in the quality of the cream received at the different creameries. Cream quality was influenced more by the attitude of the creamery management than by reason of any regional, climatic, or other conditions. There was intense competition for cream among the different creameries in the state. With no compulsory system of paying for cream in accordance with quality, the competition resulted in a sacrifice of quality in order to maintain volume.

In nearly every plant visited some undesirable practices were noticed. The most common of these were the lack of proper grading

of the cream before churning and failure to keep out the old and off-flavored cream for churning separately. It was customary for the buttermakers in many of the plants to include with the regular churning the poorer lots of cream received in the hope that the defective flavor would be concealed. Incorrect methods of neutralizing and pasteurizing cream were common. Ordinary cheap glass thermometers were used by most plants. Yeast and mold control was inadequate.

With such conditions, it is not surprising that an undesirable flavor developed in some of the butter during its trip from the creamery to the consumer's table. Some of the complaints received from California can be explained partly by the presence in the butter at the time of manufacture of an excessive number of undesirable microorganisms.

The summary from the report of the extensive study is given below:

"There was no plant in the state that made a 92 score butter from the average quality of first grade cream received. It has been reported that occasional churnings of this grade have been produced from exceptionally good first grade cream. There were a few plants, however, that manufactured butter scoring 92 to 93 from high quality sweet cream, delivered to the plant or obtained from milk separated in the plant. If much improvement is to be made in the quality of the butter, it would seem that it must come about through a marked improvement in the quality of the cream. Too few creameries are paying for cream on the basis of quality. Cream producers should be instructed in the methods of producing cream of fine flavor and in caring for cream on the farm. The creameries should pay a differential in the price for the different grades of cream and churn them separately. Cream should be delivered with greater frequency under the present conditions of storage on the farm, and should be protected during transit. Where fresh sweet cream is purchased or where milk is received and separated at the creamery, the butter churned from such cream is usually of a 92 to 93 score quality. Butter culture, having a fine flavor and aroma, may be used advantageously in making butter of this quality. No evidence has been developed in this study to indicate that uniformly 92 to 93 score butter can be made except from sweet cream, free from undesirable flavors."

2. Convention for revision of Oregon's dairy program

Another milestone in the development of the dairy industry in Oregon was the Dairy Convention held at Oregon State College,

March 21 and 22, 1929. The convention had its origin in a series of more than 100 articles on "Making Oregon the Great Dairy State," prepared by the associate editor of The Oregon Journal, Mr. Marshall N. Dana. At the Oregon Dairymen's Association annual meeting at Medford, January 1929, it was decided to join other state agencies in a conference on the further development of Oregon's dairy industry.

Of the 182 registered delegates to the convention, 102 were producing dairymen, 21 represented dairy-manufacturing interests, 6 were bankers, 11 were members of the College staff, 12 were county agents, and 30 were public officials.

The convention was cognizant of the need for an improvement program particularly with reference to butter. The quality of Oregon butter was not as high as it should be when the butter was to be sold on discriminating markets. The convention went on record as favoring uniform grades for cream and price differentials between the grades. This was believed to be necessary in order to force the delivery to the creameries of more cream of the better grade.

The convention went on record favoring the adoption of the Federal grading service for butter and cheese in Oregon. It was recommended that the Portland Dairy Exchange, Oregon State College, the Dairy and Food Commissioner, and the Oregon Creamery Operators' Association work out plans to assure Federal, or Federal-State inspection of butter and cheese beginning July 1929.

A committee of practical buttermakers to establish correct manufacturing rules and practices was appointed by the convention.

As will be seen later in this discussion, these recommendations have been put into effect.

3. Federal grading of butter inaugurated

The Federal butter-grading program was started in Portland, July 1, 1929, with the opening at Portland of a branch of the Bureau of Agricultural Economics, United States Department of Agriculture.

4. The dairy demonstration train

With a view of presenting basic facts regarding dairy farming and dairy manufacturing and marketing in an interesting and easily understood way to dairy farmers and others in some of the most important older and newer dairy areas in the state, the Spokane, Portland, and Seattle Railway cooperated to bring College specialists and a trainload of exhibits to these dairy areas.

The train traveled through the northwestern part of Oregon and through certain parts of central Oregon during June 1930. In

all, 16 communities were visited and 16,000 persons viewed the exhibits and attended the educational meetings. The train featured lower costs, higher quality, better marketing and increased consumption. A summary of the program of lectures given by the specialists on the train and a description of the exhibit material were printed in an Extension bulletin.*

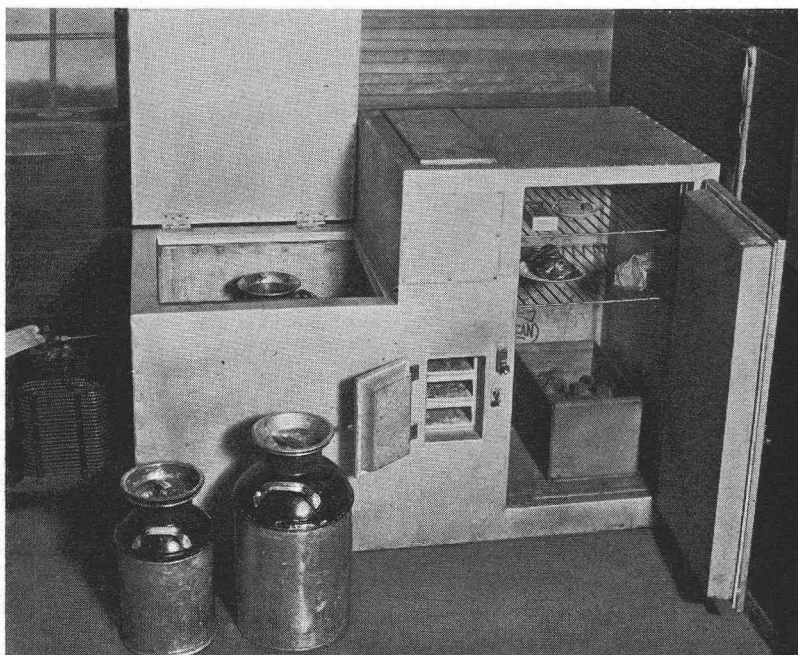


Figure 12. A combination household and dairy refrigerator designed by Oregon Agricultural Experiment Station.

In the foreword to the bulletin it was stated that :

“Already an industry with products aggregating twenty-five million dollars a year—market milk and cream, butter, cheese, condensed and powdered milk, ice cream and cottage cheese—dairy production and manufacturing in Oregon are still capable of further development and expansion. This development will probably depend upon two fundamental principles: first, lower cost of production of the raw product, and second, the manufacture of products of higher quality. This demonstration train is part of a constructive campaign to promote sound development by practical and proved methods.”

* *The Dairy Demonstration Train*, Oregon Ext. Ser. Bul. 421, 1930.

THE BUTTER QUALITY IMPROVEMENT PROGRAM

1. Oregon State College monthly butter scoring and analysis service.

Because of the great variation in the quality of the butter made and the small quantity of high-scoring butter found on the market, the Oregon Agricultural Experiment Station, in March 1929, started a free monthly butter-scoring and analysis service. It was thought that such a project would help to improve and standardize the quality of the butter made in the state and thus improve its marketability. The plan for the service was perfected at a meeting at Portland in February 1929.*

This service was offered to all creameries and during the first year was taken advantage of by 60 different plants. The number using this service has increased gradually until during the tenth year 71 of the state's 95 creameries took advantage of the service. In view of the public-service character of the work, no research or other special legislative funds have been used for defraying the cost.

The majority of the creameries have submitted samples regularly. Each year several creameries that have not previously participated have started sending samples. Usually these plants encounter some marketing difficulty, as a result of which they become interested in the scoring and analysis service of the College. Each of the participating creameries has mailed two one-pound prints of butter from its regular first-grade churnings on the second Monday of each month. One of the pound prints has been scored when fresh—about one week old—and the other has been held 30 days at from 40° to 50° F. before being scored. Before scoring, each print has been rewrapped in plain paper and given a number for identification. The work of scoring has been done by a group of competent butter judges consisting of Federal and State officials and commercial men.

The work has been kept confidential. The judges have had no knowledge of whose butter they were scoring. In addition to the scoring, a determination of the amount of fat, moisture, salt, and curd, and the number of yeasts and molds present has been made. From the results obtained, an efficiency score for each sample has been calculated.

Most of the scorings have been held in the Dairy Building at Corvallis, but in order to show creamery operators how the scoring is carried on, at times the samples have been taken into the different sections of the state and scored during a meeting of creamery

* Those present were H. C. Raven, R. E. Cavett, commercial creamery operators; L. B. Ziemer, Deputy Dairy and Food Commissioner; and the senior author, G. H. Wilster. The meeting was held at the Multnomah Hotel, Portland, February 1929.

operators and buttermakers. This has provided opportunity for each operator to check the scores given on the different samples.

While participation has not been 100 per cent, from 60 to 70 creameries have been participating during the period that the scoring service has been in effect. During the past two years, creameries manufacturing from 75 to 80 per cent of the butter in the state have been sending samples. In the reports each month timely suggestions have been made regarding methods of manufacture and problems of current importance. The importance of using clean separators and utensils on the producing farms, the effect of feeds and weeds on the flavor of milk and cream, neutralization and pasteurization of cream, methods of controlling yeasts and molds, methods of controlling bitter flavor, and many other factors affecting market value have been discussed in the reports. Through the medium of the monthly report, buttermakers have been advised of defects that have occurred in Oregon butter sold on out-of-state markets. Information as to how these defects could be controlled has been given.

A progress report was published in 1935.*

A clear-cut statement as to the value of the scoring service was recently made.†

A comparison of the data in Table 2 shows the remarkable improvement that has taken place during the ten years since the scoring and analysis service was started.

Table 2. COMPARISON OF SCORES OF BUTTER.

Scores	1929 First year 435 churnings	1938 Tenth year 609 churnings	Change
	Percentage of all	Percentage of all	Tenth year compared with first year
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
92 and above.....	7.8 } 40.9	56.7 } 92.6	+48.9
91 and 91½.....	33.1 }	35.9 }	+ 2.8
90 and 90½.....	38.6 }	6.4 }	-32.2
Below 90.....	20.5 } 59.1	1.0 } 7.4	-19.5

* Wilster, G. H., *Six years of progress in improving the quality and standardizing the composition of Oregon butter*, Oregon Agr. Exp. Sta. Bul. 335, 1935.

† Morse, R. W., *A Program For Improving the Quality of Butter*. Paper presented at Western States Extension Service Conference, Berkeley, California, August 17 to 20, 1938.—“The results of this service are hard to measure. Of outstanding importance in my mind is the change of attitude of buttermakers and creamery operators. From being satisfied with ‘Rule-of-thumb’ methods, they realize the value of the latest scientific methods. They also recognize the necessity of insisting on a better-quality product from the producer. This change in attitude was one of the reasons for creamery operators advocating a compulsory cream-grading law which was enacted at the last session of the Legislature. Some of the main supporters of this law had previously been violently opposed to cream-grading legislation. During the first few years of the scoring service, there was a fairly general idea that buttermakers were not presenting average churnings but were selecting their best churnings as samples. Confidential checks made on samples collected by the Department of Agriculture in checking consumer grades indicate that this is not true. The two sets of grades check out very closely.”

The data show that the improvement work has been effective in reducing the amount of low-grade and increasing the amount of high-grade butter. In 1929 only 40.9 per cent of the butter scored 91 or above, whereas in 1938 the percentage was 92.6. During the first year of the scoring 59.1 per cent of the samples was of low quality—below 91 score—whereas during the tenth year only 7.4 per cent was of this quality.

The goal of course is to eliminate all low-scoring butter and to manufacture butter only of the 91-, 92-, and 93-score quality.

Figure 15 shows clearly the improvement that has taken place during the past ten years.

It should be noted that a steady improvement took place during the first nine years. The introduction of compulsory grading of milk and cream was largely responsible for the considerable increase in butter of the 92-score quality during 1937. The statistics indicate a slightly lower percentage of butter of this quality during 1938. This was due to a redefinition of the Federal butter grades and a readjustment of the Federal grading methods that took place



Figure 13. Scoring butter submitted to the monthly scoring and analysis.

during the latter part of 1938. Only one standard for grading butter can be used in the state. The change resulted in an increase in the percentage of 91-score and a decrease in the percentage of 92-score butter. In spite of the statistics, there was actually an improvement in 1938 as compared with 1937.

A comparison of the scores of the butter examined in 1926 (James-Jamison Survey) and the scores of the samples entered for the 10th year of the monthly butter-scoring service shows very strikingly the improvement that has taken place (Table 3, Figure 14).

Table 3. COMPARISON OF SCORES OF BUTTER BEFORE THE IMPROVEMENT WORK STARTED AND FOR THE TENTH YEAR OF THE IMPROVEMENT WORK.

	1926	1938
	Percentage of all samples	Percentage of all samples
	<i>Per cent</i>	<i>Per cent</i>
92 score and above.....	5.3 }	56.7 }
91 and 91½	7.1 } 12.4	35.9 } 92.6
90 and 90½	18.0 }	6.4 }
Below 90 score.....	69.6 } 87.6	1.0 } 7.4

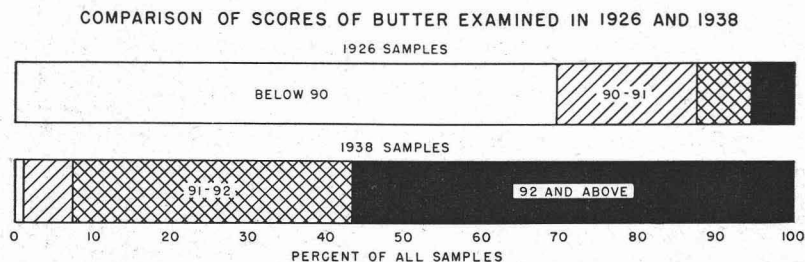


Figure 14.

COMMERCIAL VALUE OF OREGON'S BUTTER INCREASED. A simple calculation will show the commercial value of the butter represented in the scorings if it were of the quality as indicated by the scores in 1929 and 1938.

The average wholesale prices for butter of the different grades in San Francisco in 1938 were:

92 score	28.27 cents
91 score	27.35 cents
90 score	27.01 cents
89 score	25.88 cents

This shows that there was a difference in the price of 92-score and 89-score butter of 2.39 cents a pound.

COMPARISON OF BUTTER SCORES

1929-1938

5724 CHURNINGS

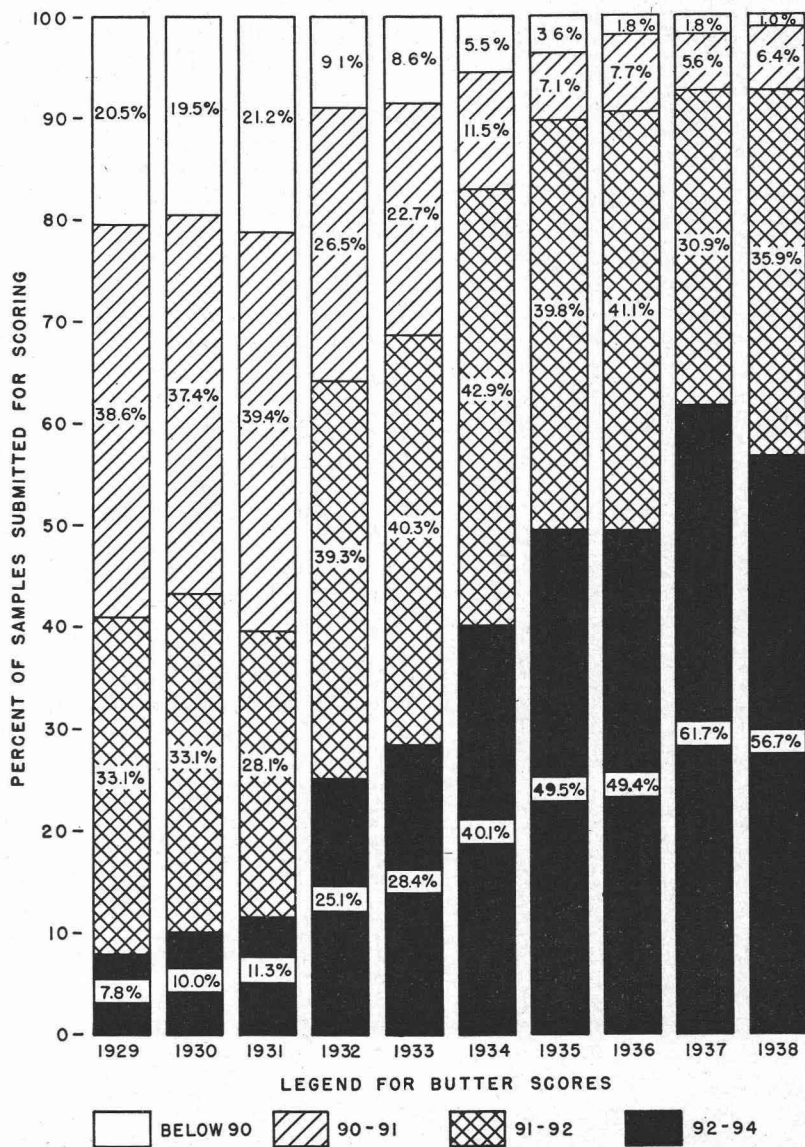


Figure 15.

The total quantity of butter made by the participating creameries in 1938 was approximately 25,000,000 pounds. The market value of this amount of butter calculated from the average 1938 scores and 1938 wholesale prices at San Francisco was \$6,958,795. If the same amount of butter had been sold under the average scores that existed in 1929 and at the 1938 prices it would have returned only \$6,747,292. The difference in favor of the 1938 scores is \$211,502. Had all of the butter been sold on the basis of the 92-score wholesale San Francisco price of 28.27 cents per pound, the value of the butter would have been increased an additional \$108,705.

This shows very clearly that the improvement in quality has greatly increased Oregon's annual income from sales of butter. The increased income has gone into nearly every county in the state.

A reduction of one cent a pound in the market value on 1,000,000 pounds of butter amounts to \$10,000; on 10,000,000 pounds \$100,000; on 20,000,000 pounds \$200,000; and on 30,000,000 pounds \$300,000.

A loss of two cents a pound for these amounts would mean losses of \$200,000, \$400,000, and \$600,000 respectively.

KEEPING QUALITY IMPROVED. The butter during the tenth year kept better during the one month's storage test than did the butter made during the first year of the scoring. The average decrease in score during the first year was 0.82. During the tenth year, it was only 0.54. It is imperative that the butter be manufactured in such a way that it will have good keeping quality.

THE COLOR OF OREGON'S BUTTER MADE MORE UNIFORM. Consumers are sensitive to a change in the color of butter. They demand that it be kept uniform from day to day throughout the year. It is therefore necessary for the buttermakers to standardize the color of the butter they are marketing. All samples of butter received

Table 4. COMPARISON OF THE COLOR OF THE BUTTER. FIFTH YEAR AND TENTH YEAR.

Yellow shade number	1933 Fifth year	1938 Tenth year
	Percentage of all samples	Percentage of all samples
	<i>Per cent</i>	<i>Per cent</i>
1 light	4.4	2.3
2 medium light	19.8	22.7
3 ideal	42.5	72.2
4 medium dark	26.4	2.6
5 dark	6.2	0.2
6 very dark	0.7	0

have been graded for color during the past six years of the scorings. Standard color-comparison cards have been used. As will be seen

from Table 4, the color was more uniform during the tenth than during the fifth year. Shade No. 3 is ideal.

GREATER UNIFORMITY EFFECTED IN COMPOSITION. The composition of butter must be right. If the fat content is below 80 per cent, Federal and State laws are violated. If it is much above 80 per cent, there is an economic loss. The salt content must be held within close limits. If it is too low, the flavor will be somewhat flat and the keeping quality may be lowered. If the salt content is excessive, the butter will have a coarse, briny flavor. Consumers quickly notice a change in the salt content.

THE FAT CONTENT HAS BEEN STANDARDIZED. Marked improvement has taken place in the composition of the butter made. But, since in case of the fat content, 80 to 80.7 per cent would be considered satisfactory, the records show that only 63.3 per cent of the samples during the tenth year contained that amount, there is opportunity for further improvement.

Table 5. CHANGE IN THE FAT CONTENT OF BUTTER ANALYZED.

Per cent of fat	1929 First year	1938 Tenth year	Change
	Percentage of all samples	Percentage of all samples	Tenth year com- pared with first year
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
Less than 80	15.6	5.3	-10.3
80.0 to 81.0	56.9	78.1	+21.2
81.1 and above	27.5	16.6	-10.9

If a creamery makes 1,000,000 pounds of butter in one year and the butter contains 1 per cent fat in excess of the normal, it loses the value of 10,000 pounds fat. If this fat is worth 30 cents a pound, the loss sustained is \$3,000. It pays to control the composition of butter!

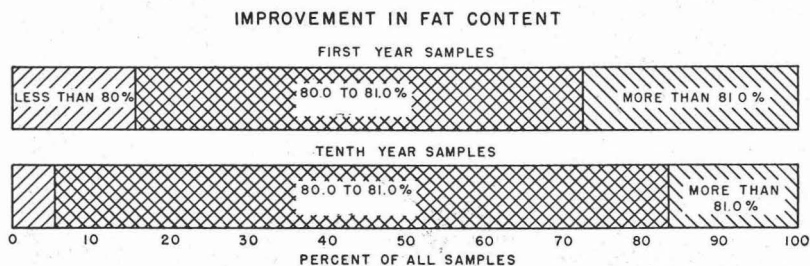


Figure 16.

SALT CONTENT REDUCED TO MEET MARKET DEMAND. The salt content has been reduced. Consumers prefer light-salted butter. About 2.2 to 2.3 per cent salt seems to be ideal. Table 6 very strikingly shows the effectiveness of the program to reduce the salt content to meet market requirements. Scores were undoubtedly increased by lowering the salt content.

Table 6. CHANGE IN THE SALT CONTENT OF THE SAMPLES ANALYZED.

Per cent of salt	1929 First year	1938 Tenth year	Change
	Percentage of all samples	Percentage of all samples	Tenth year com- pared with first year
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
Less than 2.6.....	28.5	91.5	+63.0
2.6 to 3.0	48.7	8.4	-40.3
3.1 and above	22.8	0.1	-22.7

YEAST AND MOLD CONTENT NOW LOWER. The yeast and mold content of the fresh samples of butter is, to a large extent, an indication of the efficiency of pasteurization of the cream and of the efficiency in the cleaning and the sterilizing of the buttermaking equipment. The yeast and mold counts were high during the first several years. Improvement has been made, but a large number of churnings of butter during the tenth year contained an excessive number of these organisms. Butter should be free from yeasts and molds. Moldy

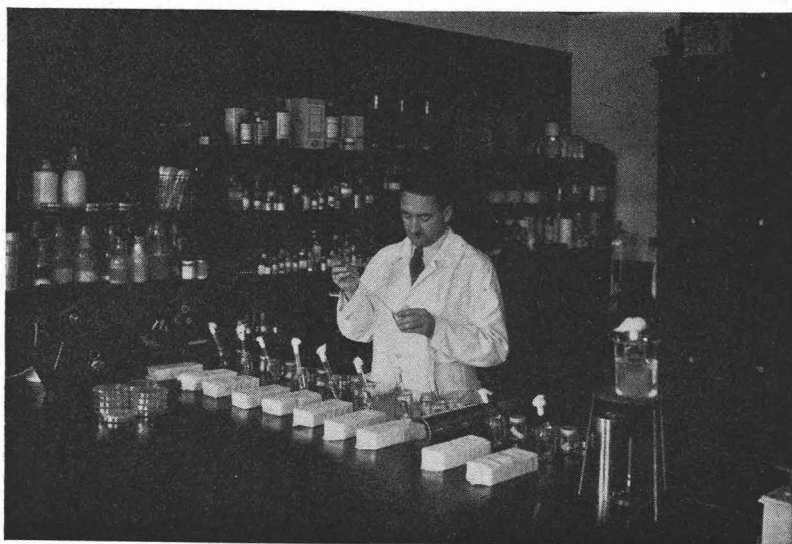


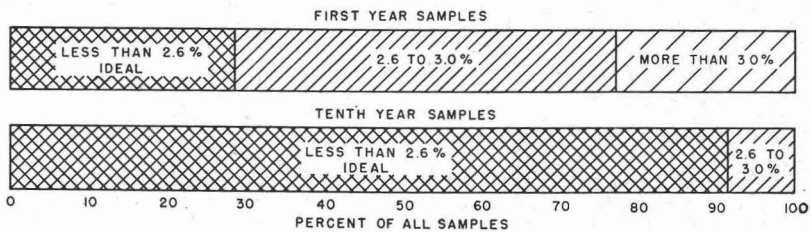
Figure 17. Determining the numbers of yeasts and molds in butter.

butter found on the market means not only a total loss of the particular lot, but a more serious loss due to buyer resistance to further purchase of butter from the same source.

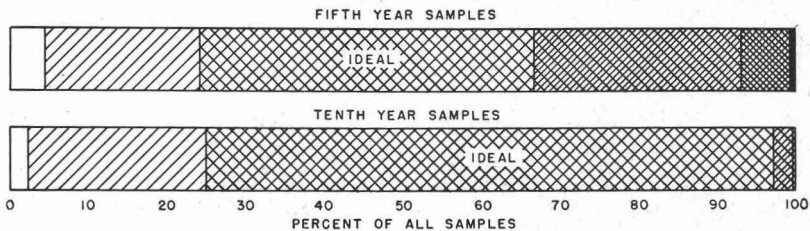
Table 7. CHANGE IN THE YEAST AND MOLD COUNTS OF THE SAMPLES ANALYZED.

Yeasts and molds per cc. of melted butter	1930 Second year	1938 Tenth year	Change
	Percentage of all samples	Percentage of all samples	Tenth year com- pared with first year
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
Less than 10.....	5.1	25.2	+20.1
10 to 100.....	30.1	47.8	+17.7
101 to 1,000.....	47.3	23.6	-23.7
More than 1,000.....	17.5	3.4	-14.1

IMPROVEMENT IN SALT CONTENT



IMPROVEMENT IN BUTTER COLOR



IMPROVEMENT IN YEAST AND MOLD COUNTS

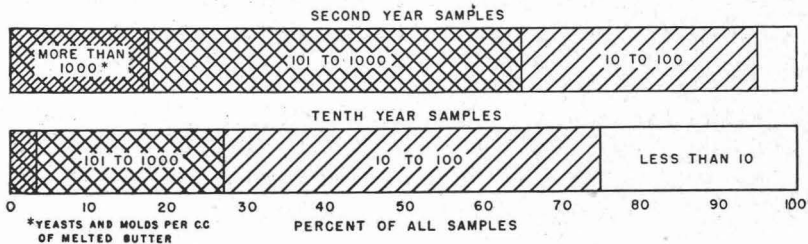


Figure 18.

SUMMARY OF TEN YEARS' BUTTER IMPROVEMENT AND STANDARDIZATION. In summarizing the ten years' work, it can be stated that:

- (1) The flavor and body and texture of the butter made in the majority of Oregon's creameries have shown substantial improvement.
- (2) Through better methods of manufacture, the keeping quality of the butter has been improved.
- (3) The color of the butter has been made more uniform.
- (4) A higher percentage of the butter during the tenth year contained the ideal percentage of fat than was the case during the first year.
- (5) The salt content of the butter has been reduced to suit market requirements.
- (6) The general quality of the butter has been made more uniform and more suitable for shipment to out-of-state markets.
- (7) The market value of the butter made has been greatly increased.

This project with some slight changes is still active. The eleventh year of the scoring and analysis began in March 1939.

2. Establishment of grades and standards for milk, cream, and butter.

The first bill for the compulsory grading of milk and cream for manufacture, and for payment for the products in accordance with grade, was introduced in the State Legislature in 1929. It was sponsored by a number of dairy leaders, but it failed to pass.

The Dairy Convention held at Corvallis in March 1929 recommended the adoption by the industry of voluntary grading of cream until legal action could be obtained.

The Legislature in 1931 enacted a law that defined standards and grades of cream.* The grades were not compulsory. The Legislature also established compulsory grading and labeling of butter.† The Dairy and Food Commissioner was empowered by the Legislature to make rules and regulations for the enforcement of the act. These rules were, after due public hearing, established by the Commissioner. Little progress was made under the two legislative acts.

It was not until introduction of the marketing agreement under the Oregon Agricultural Adjustment Act‡ that some progress in grading butter and cream took place. The agreement was between

* Chapter 120, Oregon Laws, 1931.

† Chapter 116, Oregon Laws, 1931.

‡ Chapter 37, Oregon Laws, 1933, Second Special Session.

the Director of the State Department of Agriculture and the manufacturers and distributors of butter in Oregon.* The State Director of Agriculture was delegated by the Governor, pursuant to the provisions of the act, to conduct public hearings, and was given authority to approve a marketing agreement. The agreement was, accordingly, approved by the Director April 6, 1934, and became effective on April 16, 1934.

A committee, "The Oregon Butter Committee," was formed to administer the so-called code.

With reference to the purchase of cream, the code recognized three grades:

"Grade A cream—That which is obtained from the producer delivering not less often than twice weekly, and which is free from objectionable flavor.

"Grade B cream—That delivered less often than twice weekly and which will make not less than 90-score butter.

"Grade C cream—All other cream, such as that having onion, garlic, or other objectionable flavor."

It also provided that the price of Grade B butterfat should be one cent under the minimum price for Grade A butterfat, and Grade C butterfat should be paid for at its market value.

Three "consumer" grades of butter were established:

"Grade A butter—Butter of 92 score or better.

Grade B butter—Butter of 90 or 91 score.

Grade C butter—Butter of below 90 score."

Each manufacturer was required to employ a licensed butter grader. A license was issued to each grader after he had demonstrated his competence to grade. The State College cooperated in the work of examining the butter graders by providing a man to travel to various parts of the state with representatives of the State Department of Agriculture to conduct schools and give examinations.

This was a considerable step in advance. Definite compulsory grades for cream and butter were established and price differentials for the different grades were made mandatory.

Periodic checks on the accuracy of grading were made by the State Department of Agriculture. The butter graders were told that it was necessary to maintain the standard prescribed by the Department of Agriculture, but that their licenses would not be revoked just because a single pound of butter was found to be under grade.

The marketing agreement was short-lived. Because of a decision by the Oregon Supreme Court it became inoperative during

* Provisions of the Oregon Butter Code. By Max Gehlhar.

1935. The Oregon Butter Committee ceased to function October 22, 1935.

Laws enacted in 1933 and 1935 provided that anyone who desired could label food products Grade A, B, or C, after having obtained a license from the State Department of Agriculture, and having agreed to comply with certain specific rules and regulations. A number of creameries took advantage of this and continued to label their butter A, B, or C.

The rules and regulations for the use of the above method of labeling were issued February 10, 1936.* State College officials cooperated in formulating the grades of cream and butter. The rules were later incorporated in the compulsory cream- and butter-grading law with only slight modification.

3. Quality improvement meetings

Simultaneously with the operation of the butter-marketing agreement in 1934, news reached the state that the Federal Food and Drug Administration had launched a program of checking on the condition of cream and butter that entered Interstate Commerce. Reports were received that thousands of pounds of butter and large quantities of cream were being condemned in certain sections of the United States as unfit for human food. The reason was the presence in the butter and cream of extraneous matter—dirt, mold, insects—and that some cream showed the effects of an excessive bacterial, yeasty, or moldy fermentation.

The Oregon butter industry immediately took steps to avoid any difficulty with the Federal agency over butter made in the state. The Extension Service of Oregon State College was appealed to for help in a state-wide cream- and butter-improvement campaign. Two

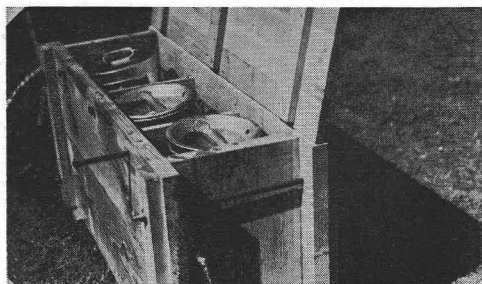


Figure 19. A cream cooling tank using cold, flowing water.

men from the College cooperated. Others who cooperated represented the State Department of Agriculture, the Oregon Dairy Council, county agricultural agents, and private and producer creamery organizations.

By means of charts and exhibits, the story of the sanitary production

* Mickle, J. D., and White, S. T., Oregon State Department of Agriculture Bulletin 56, August 1936.

of milk and cream was told to producers and creamerymen in a state-wide series of meetings. Demonstrations of methods of testing cream and butter for extraneous matter were made. A large number of people attended these meetings.

Later, district meetings sponsored by the local creameries were held. Producers were informed of the Food and Drug Administration's activities and were asked to cooperate in the improvement work by taking precautions to protect the cream from contamination with foreign matter until it was sent to the creamery.

A few cans of cream were condemned, but apparently no Oregon butter was condemned by the Federal authorities.

During the spring of 1935, state-wide meetings were again held. These meetings were arranged for by the creameries in each locality. Methods for producing and cooling milk and cream were discussed at the meetings. A report of the progress as a result of the monthly butter scoring and analysis was also made.

4. The milk, cream, and butter grading law

After many years of attempting to get the State Legislature to empower the State Department of Agriculture to establish official state grades and standards for milk and cream purchased from the producers for manufacturing purposes, a group of forward-looking men finally succeeded in obtaining favorable action from the Legislature.

The milk-, cream-, and butter-grading law became effective March 8, 1937.* This was an important step in the development of Oregon's dairy industry.

The law as enacted provided for:

- (1) Repeal of the ineffective 1931 laws and establishment of compulsory grades and

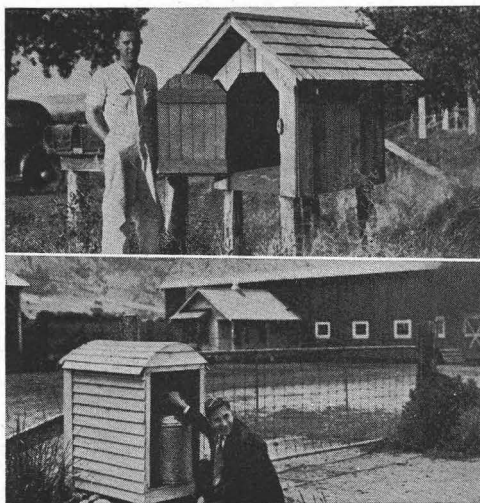


Figure 20. Two types of roadside cream shelters.

* Chapter 279, Oregon Laws, 1937.

standards for milk and cream obtained from producers for commercial use.

- (2) Regulation of the purchase and handling of milk and cream for manufacturing purposes, requiring proper grading.
- (3) Establishment of state consumer grades for butter, requiring grading and labeling of butter sold to retailers and consumers in accordance therewith.
- (4) Provision for the licensing of milk, cream, and butter graders and annual license fees.
- (5) Definition and regulation of unlawful milk and cream.
- (6) Penalties for violation of the provisions of the law.

One of the most important requirements of the law is that when two or more grades of milk or cream are purchased by a creamery, a differential of not less than one cent per pound of butterfat should be maintained. The State Department of Agriculture, after public hearing, established grades and standards for milk, cream, and butter. After operating under these grades for two years, another hearing was held and revised grades were promulgated on May 18, 1939. These grades and standards are being strictly enforced.*



Figure 21. A well-designed truck for hauling cream. Cream must be protected against sun and dust during transportation from farm to creamery.

In order to assist producers in meeting the requirements for the highest grades of milk and cream, the Extension Service published a short, concise outline of the factors that should be considered in the pro-

duction of milk and cream of high quality..†

The benefits of the law have been :

- (1) The market value of milk and cream sold to manufacturing plants has been increased.

* Metzger, A. W., and Mickle, J. D., *Rules and Regulations, Grades and Standards*, State Department of Agriculture, Division of Foods and Dairies, Salem.

† Wilster, G. H., *The Production of Milk and Cream of High Quality*, Oregon Agr. Ext. Service Bul. 502, 1937. (An earlier bulletin on this subject, prepared by O. G. Simpson was published by the Extension Service in 1914).

- (2) There is economic encouragement to producers who wish to produce and sell high-quality milk and cream.
- (3) The purchase of milk and cream by creameries is now made on a fairer basis.
- (4) A larger percentage of high-grade milk and cream is produced than formerly.
- (5) Milk and cream are now transported to plants more efficiently. Greater care is taken to bring the milk and cream to the manufacturing plants without a lowering in quality due to exposure to sun and dust.
- (6) Cream is handled more promptly at creameries.
- (7) The tagging, denaturing, and returning to the producer of milk or cream unfit for human consumption is required by law.
- (8) Further improvement in the quality of butter, cheese, and other products.

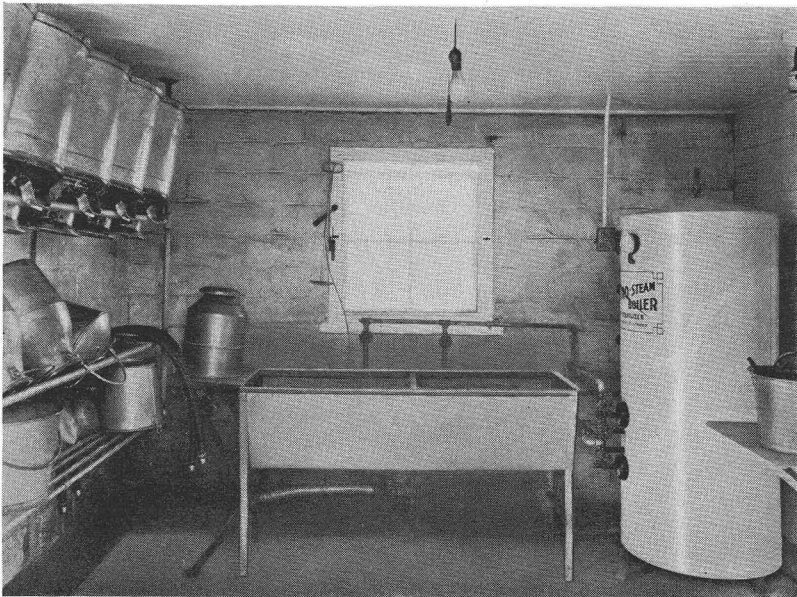


Figure 22. Clean utensils are paramount in the production of high grade milk and cream. The electric steam boiler has a capacity of 30 gallons water. It maintains automatically a steam pressure of 60 pounds continuously and supplies both steam and hot water. This electric steam boiler is used on a farm where 70 cows are milked and the unit is giving very satisfactory service.

5. Manufacturing grades of milk and cream

The following were the grades promulgated by the State Department of Agriculture, May 18, 1939:

FIRST GRADE MILK. First Grade Milk is the lacteal secretion obtained by the complete milking of one or more healthy cows, properly fed and kept, excluding that obtained within fifteen days before and five days after freshening, or such longer period as may be necessary to render it colostrum free. The milk must retain the blue color for a period of not less than five and one-half hours when tested for bacteria by the methylene blue test. If tested by the acidity test, it must contain not over 0.2 of 1 per cent of acid calculated as lactic. It shall be free from sediment as determined by the method approved by the State Department of Agriculture for making such examination, sediment test to be performed by a tester of the long barrel suction type, or other sediment tester as approved by the State Department of Agriculture. It shall also be free from any sour taste, weedy or pronounced feed flavor, barny, cowy, salty, bitter, or unclean flavor or odor. It shall not be ropy, bloody, or give any indication of having come from a diseased udder, and shall be delivered to the manufacturing plant in clean and rust-free containers. It shall be produced under conditions and methods that conform to the requirements of Section 41-301, Oregon Code 1930, as amended by Section 1, Chapter 80, Oregon Laws, 1939.

SECOND GRADE MILK. Second Grade Milk is milk that conforms to the definitions and standards for First Grade Milk, except that it may be slightly off in flavor, and when the methylene blue test is applied, the blue color may disappear in less than five and one-half hours. If tested by the acidity test, it may have slightly over 0.2 of 1 per cent of acid calculated as lactic. It must not contain any dirt, filth, oil, or any foreign matter that may render it unfit for human consumption.

UNLAWFUL MILK. Unlawful Milk is milk that contains dirt, filth, oil, or other foreign matter which renders it unfit for human consumption or milk that is unclean or unwholesome. Such milk must be denatured by a harmless coloring matter which will prevent the same from being used for human consumption. This milk must not be dumped from the original container, but must be tagged according to law and returned to its origin.

PREMIUM CREAM. Premium Cream is a portion of the lacteal secretion obtained by the complete milking of one or more healthy cows properly fed and kept, excluding that obtained 15 days before and five days after freshening or for such longer period as may be necessary to render the milk from which such cream is taken colos-

trum free; that is high in fat content, clean to the taste and smell, smooth, without objectionable flavor or odor such as fishy, feed, oily, old, weedy, sour, barny, bitter and metallic, or other objectionable flavors, and having, at the time and place of receipt for grading, an acidity content not in excess of 0.35 of 1 per cent calculated as lactic acid. The fat content thereof should not be less than 28 per cent. It must be produced in accordance with the provisions of Section 41-301, Oregon Code, 1930, as amended by Section 1, Chapter 80, Oregon Laws, 1939, and Section 41-302, Oregon Code 1930.

FIRST QUALITY CREAM. First Quality Cream is cream that conforms to the definitions and standards for Premium Cream, except that it may have a slightly objectionable flavor or odor, is too sour or too old to grade as Premium Cream, but it must not show, at the time and place of receipt for grading, an acidity content of more than 0.6 of 1 per cent of acid calculated as lactic.

SECOND QUALITY CREAM. Second Quality Cream is cream that conforms to the standards and definitions for first quality cream except that it may have an acidity of more than 0.6 of 1 per cent calculated as lactic acid. It may have a pronounced feed, high acid, or old flavor. It must not have an obnoxious weed flavor, or be cheesy, rancid, putrid, decomposed, or actively foaming.

UNLAWFUL CREAM. Unlawful Cream is cream that contains dirt, filth, oil, or other foreign matter which renders it unfit for human consumption, or that is stale, cheesy, rancid, putrid, decomposed, or actively foaming. Such cream must be denatured by a harmless coloring matter which will prevent the same from being used for human consumption. This cream must not be dumped from the original container, but must be tagged according to law and returned to its origin.

6. Consumer grades of butter

The following grades were promulgated by the State Department of Agriculture, May 18, 1939:

A GRADE BUTTER. All butter designated, wrapped, sold or offered or exposed for sale, or distributed to retailers or consumers as of the quality of A Grade shall be free from extraneous matter and shall score 92 points or above.

B GRADE BUTTER. All butter designated, wrapped, sold, or offered, or exposed for sale, or distributed to retailers or consumers as of the quality of B Grade shall be free from extraneous matter and shall score less than 92 points but not less than 90 points.

C GRADE BUTTER. All butter designated, wrapped, sold, offered, or exposed for sale, or distributed to retailers or consumers as of the

quality of C Grade shall be free from extraneous matter and shall score less than 90 points but not less than 88 points.

UNLAWFUL BUTTER. Any butter not meeting the requirements as set out in subdivision 5 of section 41-203, Oregon Code 1930, defining the adulteration of foods, shall be deemed to be unlawful and shall not be offered for sale for human consumption in the retail trade of the state of Oregon.

7. Milk, cream, and butter grading schools and examinations

Because the milk-, cream-, and butter-grading law provided for the licensing of all milk, cream, and butter graders, it was necessary to conduct a number of milk-, cream-, and butter-grading schools in various parts of the state. These schools were conducted jointly by members of the State Department of Agriculture and members of the Department of Dairy Husbandry of Oregon State College.

At the conclusion of each of these schools, examinations were given where each milk, cream, or butter grader who was applying for a license had an opportunity to show his qualifications for properly grading milk, cream, or butter. A total of approximately 600 examinations were given in 1937.

8. Rules for the manufacture of butter

The committee appointed by the dairy convention at Corvallis in 1929 to make rules for the manufacture of butter in Oregon cream-



Figure 23. A class receiving instruction in grading cream at Oregon State College.

eries met shortly after the convention and decided on a satisfactory set of rules. A copy of these was sent to all the creameries in the state. The rules were revised in 1934.

9. Licensing of butter and cheese makers

The 1917 Legislature defined "buttermaker" and "cheesemaker,"* and provided for licensing them by the Dairy and Food Commissioner, whose functions were later taken over by the State Department of Agriculture.† The 1939 legislature‡ reenacted the 1917 law, adding a requirement that the Department of Agriculture include in its regulations a provision that applicants be required to pass an oral and written examination before being licensed. The qualifications of the applicant include a previous record in operating and keeping in a sanitary condition the butter or cheese factory in which he has been employed. The first examination was conducted by an examining board|| on November 2, 1939.

MARKET DEVELOPMENT ACTIVITIES

1. The State Department of Agriculture

The State Department of Agriculture was created by state legislative act in 1931. The work of the department is regulatory and administrative. It operates six divisions: Administration; Foods and Dairies; Plant Industry; Animal Industry; Market Enforcement, Weights and Measures; and Grain Inspection.

The duties of the Division of Foods and Dairies are:¶

"To enforce the dairy and food laws, including sanitary regulations in markets, restaurants, bakeries, candy factories, and all other places where foods are processed, prepared, manufactured, handled, or sold, and premises where milk or cream is produced. To administer also the food laws which include examination of food and food products offered or exposed for sale. To regulate the manufacture and sale of foods and prevent the adulteration thereof. To require medical examination of employees in food-handling establishments suspected of having communicable or contagious disease. To enforce the laws governing butter standards, imitation ice cream, and to examine and license milk and cream testers, creameries, cheese

* Chapter 92, Oregon Laws, 1917 (Sections 41-901-908, Oregon Code, 1930).

† Chapter 136, Oregon Laws, 1931.

‡ Chapter 101, Oregon Laws, 1939.

|| Composed of a member each of the State Department of Agriculture, Oregon Creamery Butter Manufacturers' Association, and Oregon State College.

¶ The Oregon Blue Book, 1939-1940, pp. 12-13.

and ice cream factories, and milk depots. To define the legal standards of ice cream and to compel the proper classification and sale of eggs and the use of proper weights and subdivisions in the sale of loaves of bread. To require the registration of commercial feeding stuffs, economic poisons and fertilizers and to supervise the chemical analysis thereof. To require the inspection of horse meat offered for sale for human consumption. To regulate keeping of certain articles of food in cold storage. To regulate the disposition of bodies of dead animals and the licensing and feeding of garbage to swine.

"Authority is given to the chief of this division to enter all places where food products are kept, stored or offered for sale. To open any container of food products and to take samples thereof for analysis. To condemn and destroy foods unfit for human consumption. To adopt standards of purity, strength, and quality of articles of food and drink, and to make rules and regulations for the enforcement of the laws. He has authority to visit by person or deputy each creamery and cheese factory at least once each year to check tests issued to farmers on milk or cream, to see that proper records are kept in relation thereto, and to enforce the laws governing the use of standardized glassware in the operation of the Babcock test. To inspect as often as possible the dairy herds of the state and the methods employed in feeding and caring for them. It is his duty also to publish a quarterly bulletin giving results of analytical examinations of foods and otherwise disseminate information for the development of the dairy industry of the state."

The duties of the Division of Market Enforcement, Weights and Measures, are:*

"To administer the weights and measures laws, the division chief serving as custodian of the state standards and acting as deputy state sealer of weights and measures. To supervise the work of district and deputy district sealers of weights and measures throughout the state. To enforce the produce act of 1939, licensing wholesale produce dealers, and retail produce peddlers. To effectuate the gasoline standardization law, licensing service station pumps and wholesale containers of petroleum products. To administer the provisions of the Oregon agricultural marketing act of 1935, which provides for the establishment of marketing standards by the director of agriculture."

The Department of Agriculture occupies an important place in the marketing picture. It operates in a field that is different from that of any other public agency, yet it serves as an important link in the whole chain of distribution. It has cooperated in the marketing of butter and cheese—for home and out-of-state consump-

* The Oregon Blue Book, 1939-40, p. 13.

tion—within its legal functions. Excellent cooperation of the department with private enterprises and with other public agencies has been noted.

2. The Oregon Dairymen's Association

The Oregon Dairymen's Association is an organization of milk producers that has been an important factor in shaping the development of the dairy industry in the state.

The Association has:

- (1) Favored Federal grading of butter and cheese.
- (2) Consistently favored the purchase by the creameries, cheese factories, and milk plants of milk and cream on a graded basis.
- (3) Recognized the need for a state-wide dairy-products-improvement program.
- (4) Sponsored research by the Oregon Agricultural Experiment Station to overcome crumbliness and stickiness in butter.

3. The Oregon Dairy Manufacturers' Association

Another organization with state-wide scope that has been active in promoting the interests of the dairy industry has been the Oregon Dairy Manufacturers' Association (formerly the Oregon Butter and Ice Cream Makers' Association).

The object of the Association is to promote the various branches of the dairy manufacturing industry in the state of Oregon. It is an association that is interested in the development of the dairy manufacturing industry.



Figure 24. A portion of those who attended the 29th Annual Convention of the Oregon Dairy Manufacturers' Association and the 47th Annual Convention of the Oregon Dairymen's Association held jointly at Oregon State College in February 1940. Nationally known leaders in marketing and sales promotion attended. More than 400 producing dairymen and dairy plant operators attended the two day meeting. The convention was occupied primarily with the problems connected with the marketing and distribution of Oregon's steadily increasing dairy production.

The Association has consistently urged the members to participate in the educational butter-scoring and analysis service; endorsed the work of the Oregon Dairy Council to promote the wider sale and consumption of dairy products; favored state supervision of milk and cream grading for manufacturing purposes; recommended the abolishment of the wasteful practice of loaning milk and cream cans to patrons; and recommended the establishment of research work, particularly for butter, at the Oregon Agricultural Experiment Station as soon as the necessary funds become available.

Since 1929, each annual convention of the Dairy Manufacturers' Association has been held at Oregon State College. A large and representative group has been in attendance at each of the three-to-four-day meetings. Many of the nation's dairy leaders have appeared on the programs. Contests in cream, butter, and ice cream judging, and contests for butter and ice cream made in the different plants have been held.

These annual gatherings have had a considerable influence on the shaping of the developments in dairy manufacturing and marketing in the state. Here plant operators and butter, ice cream, and cheese makers come to obtain new information and to confer on important problems concerning the manufacturing and marketing of their products.

4. College participation in national butter scoring contests

To assist the industry in realizing the greatest market returns the State College dairy products laboratory aims to make the highest possible quality of butter from the available raw material. Regularly since 1930, 20-pound samples of butter have been entered by the College in scoring contests held in Oregon and other states. Some of these contests have been national in scope with several hundred samples entered in competition.* Seventeen College laboratory entries scored from 93 to 96. First place was achieved once, second place twice, third place four times, and fourth place once. A number of Oregon creameries also have gained recognition at such contests.

5. Butter improvement and standardization work with Interstate Associated Creameries

Interstate Associated Creameries, a regional marketing organization, in July 1936 requested Oregon State College to make a survey of the manufacturing operations in its various plants. At the conclusion of this survey, recommendations were to be made that would have for their purpose the standardization of the quality and

* All the butter was made by H. P. C. Nielsen, Instructor in Dairy Manufacturing.

composition of the butter made in the several member creameries. This service was granted by the College, the expenses to be borne by the creameries.

A full report of the survey was made on September 13, 1936, to the directors, managers, and buttermakers assembled at a meeting at The Dalles, Oregon. Detailed reports of the manufacturing methods used at the several plants were made available to each of the creameries. In addition, a similar report, eleven pages in length, was made available to each of the creamery managers and directors. Specific recommendations for improving and standardizing the manufacturing methods and the conditions in the different creameries were made. The survey included a study of thirty different essential steps in each creamery.

One of the important decisions made at The Dalles was the adoption of a uniform manufacturing report to be used in all the creameries. A report on each churning to be sent with each shipment of butter to Portland was made compulsory.

It was also decided at the meeting that a uniform set of rules for the manufacture of butter be prepared. The College representative was asked to prepare a manual for the buttermakers. This manual was prepared and is sold by the Cooperative Book Store at Oregon State College. It supplants the rules prepared earlier.

Additional work with the member creameries was done during the summers of 1937, 1938, and 1939, the creameries paying all the expenses of this work. At the conclusion of each summer's work, a detailed report was prepared and given to each of the managers, directors, and buttermakers. Specific recommendations for improvement were made in each report. In the 1938 report, about 50 different subjects that pertained to technical butter manufacturing were discussed and specific recommendations were made.

Four annual conferences of Interstate Associated Creameries buttermakers have been held. The purpose has been to discuss methods for quality improvement and agree on standardized practices in the creameries. Each conference lasted two days. Members of the Department of Dairy Husbandry of the Oregon State College and of the United States and State Departments of Agriculture have participated in these meetings.

6. Improvement work with other creameries

A number of field trips to creameries located in all parts of Oregon to assist them in overcoming difficulties with the development of defects in the butter marketed have been made by members of the Department of Dairy Husbandry of Oregon State College.

THE CHEESE QUALITY IMPROVEMENT PROGRAM

1. Monthly cheese scoring service

The members of the staff of the Dairy Husbandry Department, Oregon State College, have also been engaged to some extent in cheese-quality improvement. With a view of aiding cheesemakers in improving the cheese, a monthly cheese-scoring service was offered in 1932 to the 50 cheese factories in the state. Approximately 30 cheesemakers indicated their desire to participate in such a service. The first scoring was held in March 1932. A total of 20 samples was entered in the scoring, the cheese being scored by a committee of commercial men.

The scores of the cheese ranged from 87.5 to 94, and averaged 90.83. The common defects were:

Flavor—sour, acid, whey, unclean, flat.

Body and texture—weak, open, pasty, mealy.

Color—white lines, acid cut.

Finish—rough edges, too much paraffin, unclean surfaces.

In the report that was sent to each of the cheesemakers, suggestions were made for improving the quality of the cheese.

A total of 175 samples of cheese was judged during the first year. In addition to giving suggestions regarding manufacturing methods, cheesemakers were advised on: (1) correct methods of



Figure 25. Cheesemakers discussing cheese standards at 29th annual convention, Oregon Dairy Manufacturers' Association, Oregon State College.

making starter, (2) pasteurizing milk for cheese, (3) testing milk by the methylene blue reduction test, (4) testing milk for casein, (5) testing the activity of starter, and (6) several other phases of cheese making.

The average scores by months were as follows:

March	90.83	September	88.37
April	90.97	October	No scoring
May	90.3	November	90.7
June	90.46	December	89.5
July	91.66	January	89.4
August	91.21	February	89.81

The cheese scorings were continued for an additional year, but because only about ten or twelve cheese factories continued to show a genuine interest in the scorings, it was decided to discontinue the service after the second year.

2. Additional cheese improvement

No collective interest on the part of the cheese industry, similar to that shown by the butter industry, to improve and standardize the quality of the cheese has been manifested. On account of certain difficulties with the cheese, particularly on the California market, however, a group of cheese factories in 1934, requested Oregon State College to conduct a survey of the conditions that existed on the dairy farms in the production of milk and in the cheese factories in the manufacture of cheese. It was their belief that one or more of the following conditions caused defects in the cheese:

1. Poor quality milk.
2. Rusty milk cans.
3. Feeding root crops.
4. Certain specific types of bacteria.

Two complete surveys were made, one during the early summer and one during the early fall, 1934. The study included the following:

1. Methods used in producing and caring for milk on the farm.

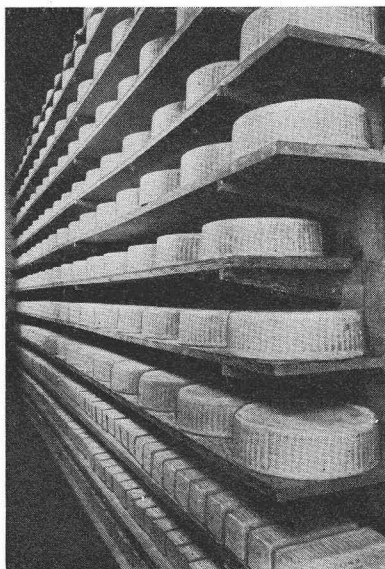


Figure 26. Standardization of quality is necessary in efficient marketing.

2. Condition of the milk when received at the factories. (This included a determination of the amount of sediment present in the milk and also a determination of the relative numbers and types of bacteria by the methylene blue reduction fermentation test.)
3. A study of the methods of manufacture of cheese in the cheese factories.
4. A study of the method of preparing starter.
5. A check on the general condition of the cheese-manufacturing and cheese-curing equipment.
6. A study of the quality of cheese after it had been cured for one month, and for four months.
7. A study of the composition of the cheese made in the different factories. (This covered a period of 12 months.)
8. A study of the quality of the cheese on the wholesale and retail markets.

Space does not permit a detailed discussion of the findings from these two surveys, nor listing of the specific recommendations made at the conclusion of the survey. The following five points in the general recommendations were suggested by the Agricultural Experiment Station as the most important in a quality-improvement program for the cheese factories:

1. Enforce the milk-inspection system and make periodic checks on the quality of the milk received at the cheese factories.
2. Improve the quality of the starter. A uniform system of making starter in the factories should be adopted. Starter should be made in a centrally located plant, and small amounts of starter, of which the purity and suitability for cheese are known, should be furnished to the factories periodically from this plant.
3. Alkali solution of correct strength should be used in all factories. The acid test is unreliable unless a reagent of correct strength is used.
4. Manufacturing methods should be standardized. Someone should be given authority to direct the work of making the cheese in all factories. This man should make an effort to unify the cheese-making methods. Cheese that best suits the consumers' taste should be made.
5. The composition of the cheese and the conditions of curing should be regulated to obtain the highest quality cheese at the time of marketing.

Improvement work of a similar nature has since been done for other organizations.

PROMOTION OF THE SALE OF DAIRY PRODUCTS

1. Need of advertising

It is remarkable that no great amount of money is spent in advertising Oregon's dairy products, which have a retail value of more than \$25,000,000 per year. Practically no money is spent in advertising butter.

Other industries are advertising through the media of radio, newspapers, magazines, billboards, and signs to sell their products.

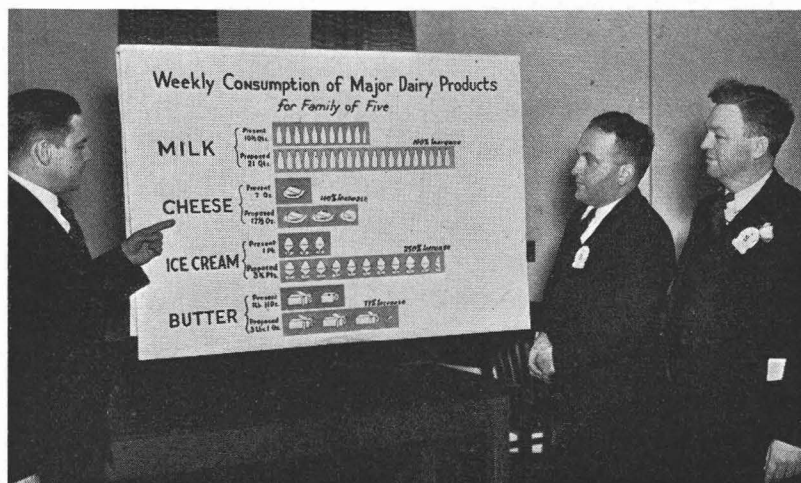


Figure 27. Dairy Products Sales Promotion was featured on the program during the 29th Annual Convention of the Oregon Dairy Manufacturers' Association and the 47th Annual Convention of the Oregon Dairymen's Association held jointly at Oregon State College, Corvallis, in February 1940. The national average weekly consumption of major dairy products for a family of five is now 10 1/2 qts. milk; 7 oz. cheese; 1 pt. ice cream; 1 lb., 11 oz. butter. The National Dairy Council advocates the following weekly consumption: 21 qts. milk; 17 1/2 oz. cheese; 3 1/2 pts. ice cream; and 3 lbs., 1 oz. butter. The recommended amounts are in accordance with the best dietary standards suggested by leading authorities in human nutrition. This presents an opportunity for the dairy industry to increase the sales of dairy products while improving the national health.

It was pointed out during the annual meeting of the Oregon Dairy Manufacturers' Association at Corvallis, February 1939* that the Oregon dairy industry had shown great development in the production and manufacturing fields but it had not shown progress in promoting the sale of the finished products. It was stated that some industries were spending many millions of dollars annually for advertising. The speaker recommended that for sales promotion the Oregon Dairy Industry assess itself 0.1 cent on each pound of butterfat marketed. This would result in the development of an

* By Frank Hettwer, Manager, Mt. Angel Coop. Creamery: *Advertising Dairy Products.*

adequate sum. Such a program would stimulate the sale of Oregon's dairy products and would warrant continued improvement work.

2. Oregon Dairy Council

One of the agencies concerned with the promotion and sale of dairy products in Oregon is the Oregon Dairy Council, organized January 5, 1932. The finances for the work of the Council are provided for by annual dues for members and by contributions. Membership payments are based on the following rates per pound of butter fat paid by both producers and distributors: milk and cream 1/10¢; ice cream, cheese, and butter, each 1/20¢.

The Council's work is based on an eight-point program:*

- (1) *Work with health departments, doctors, and dentists.* To establish a receptive attitude with health departments.
- (2) *Work in schools.* Consists of projects with teacher and pupil, work in school lunch rooms, work with supervisors of special subjects, work with 4-H clubs, etc.
- (3) *Work with home economics departments.* Brings to the attention of teachers of Home Economics recent information regarding the food value of dairy products and the importance of adequate amounts of dairy products both in food preparation and good nutrition.
- (4) *Work with adult groups.* Organized groups, such as granges, P. T. A., pre-school-study, and rural groups, including lectures and demonstrations stressing the importance of dairy products for health and economy.
- (5) *Work with civic groups.* As Portland Fire Department in their milk fund activity, in which several hundred undernourished children are given a pint of milk as a supplementary feeding.
- (6) *Publicity.* Work with radio and newspapers in supplying timely information for editorials, special sections, editions, and in supplying the papers throughout the state with a weekly issue of nutrition service called "Hi-Ways to Health".
- (7) *Work with exhibits.* At fairs, conventions, teachers' institutes, and other displays, placing before the public displays showing the food value of dairy products.
- (8) *Work with the dairy industry.* For the best interest of all branches of the dairy industry through bulletins, development of seasonal and timely printed material, taking part in conventions, programs, etc.

* Private communication from Mrs. Ada R. Mayne, Manager, Oregon Dairy Council.

MARKETING OREGON'S BUTTER AND CHEESE IN THE FUTURE

1. Continuation of quality improvement program

A number of progressive creamery operators recently requested the Oregon State College "by all means" to continue the monthly butter-scoring and analysis service.

The ten years of butter scoring and analysis has been an important factor in increasing the consumer acceptability of Oregon's butter both on the local and out-of-state markets.

Recently considerable interest in cheese improvement has been manifested.

Marketing, however, begins with the handling of the milk and cream on the farm. A sound program must include the many phases in the production of milk and cream of high quality. Consideration must also be given to storing and transporting the milk and cream from the 50,000 producing farms to the 250 or more dairy plants. Then, the proper grading of the thousands of cans of milk and cream received by the plants is a preliminary but most important step in manufacturing. The work of the licensed milk and cream graders, inspectors, field supervisors, and laboratory technicians is one of the most important in the whole series of steps from the milking of the cow to the final sale of the finished dairy products. These men have the official standards for quality in milk and cream to guide them in their work. They are responsible to the public agencies for the accuracy of their work.

Authorities seem to agree that there will be a continued increase in the quantity of milk produced in Oregon during the coming years. This means that there will be a continuance of the marketing problems.

2. Increased production and out-of-state sales of dairy products

The production of butter and cheese in Oregon has shown a steady increase (Table 8). The production of butter in 1938 was 11,600,000 pounds greater (59 per cent) than in 1921 (18 years). The production of cheese in 1938 was 9,500,000 pounds greater (94 per cent) than in 1921.

The 31,200,000 pounds of butter manufactured by the creameries in 1938 was sufficient for 1,560,000 persons, if the per capita consumption of butter is 20 pounds per year.

The 19,600,000 pounds of cheese manufactured by the cheese factories in 1938 was sufficient for 3,920,000 persons, if the per capita consumption of cheese is 5 pounds per year.

The receipts of Oregon butter in San Francisco and Los Angeles were 7,400,000 pounds greater in 1938 than in 1925 (14 years). The receipts of cheese from Oregon in San Francisco and Los Angeles were 6,200,000 pounds greater in 1938 than in 1925.

It is reasonable to expect that there will be a gradual increase in the amount of butter and cheese manufactured in the state. This increase will undoubtedly be at a greater rate than the population increase and will mean that increasing amounts will have to be sold on out-of-state markets.

Oregon's best market for its surplus butter and cheese for more than 18 years has been California, which likely will continue to be the best market. Increasing amounts of butter and cheese will be needed in California. There are some indications, however, that with a steadily increasing production, in 15 or 20 years the western states will have a surplus of dairy products.

Table 8. PRODUCTION OF BUTTER AND CHEESE IN OREGON AND AMOUNTS OF BUTTER AND CHEESE RECEIVED AT SAN FRANCISCO AND LOS ANGELES.*

Year	Butter manufactured	Cheese manufactured	Butter and cheese received at San Francisco and Los Angeles	
			Butter	Cheese
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
1921	19,600,000	10,100,000	600,000†	2,200,000†
1922	23,200,000	10,800,000	500,000†	2,400,000†
1923	No statistics	No statistics	1,200,000†	2,600,000†
1924	24,000,000	11,900,000	900,000†	2,700,000†
1925	23,800,000	11,000,000	2,400,000	5,400,000
1926	24,800,000	13,500,000	4,200,000	6,300,000
1927	26,200,000	12,900,000	3,000,000	6,200,000
1928	25,800,000	13,000,000	2,300,000	6,400,000
1929	25,300,000	12,900,000	4,000,000	7,900,000
1930	26,700,000	16,000,000	5,000,000	10,000,000
1931	28,600,000	15,400,000	5,900,000	9,600,000
1932	28,900,000	15,600,000	6,000,000	10,900,000
1933	26,600,000	15,200,000	4,700,000	8,900,000
1934	28,400,000	16,400,000	6,400,000	8,900,000
1935	29,800,000	16,400,000	8,200,000	9,300,000
1936	29,000,000	15,700,000	7,300,000	8,600,000
1937	29,400,000	19,300,000	7,200,000	11,200,000
1938	31,200,000	19,600,000	9,800,000	11,600,000
Per cent increase, 1938 compared with first year..	59	94
Per cent increase, past 10 years	23	52	145	47

* State Department of Agriculture and United States Department of Agriculture. Figures to the nearest 100,000.

† Does not include receipts at Los Angeles.

Oregon's butter and cheese come into competition on the California market with butter and cheese from other states, chiefly western. The sources of the butter and cheese received at San Francisco and Los Angeles during 1938 are given in Table 9.*

* McCampbell, F. H., United States Department of Agriculture. In "The Pacific Dairy Review," Vol. XLIII, February 1939.

Of the total butter received from 23 states the middlewestern states furnished $6\frac{3}{4}$ million pounds, or $8\frac{1}{2}$ per cent. Oregon held third rank among the states and furnished almost 10 million pounds, or 12 per cent of the total.

Of the 32 million pounds of cheese received, Oregon furnished $11\frac{1}{2}$ million pounds. This was 36 per cent of the total and more than from any other state.

OREGON BUTTER PRODUCTION AND RECEIPTS OF OREGON BUTTER
ON CALIFORNIA MARKETS

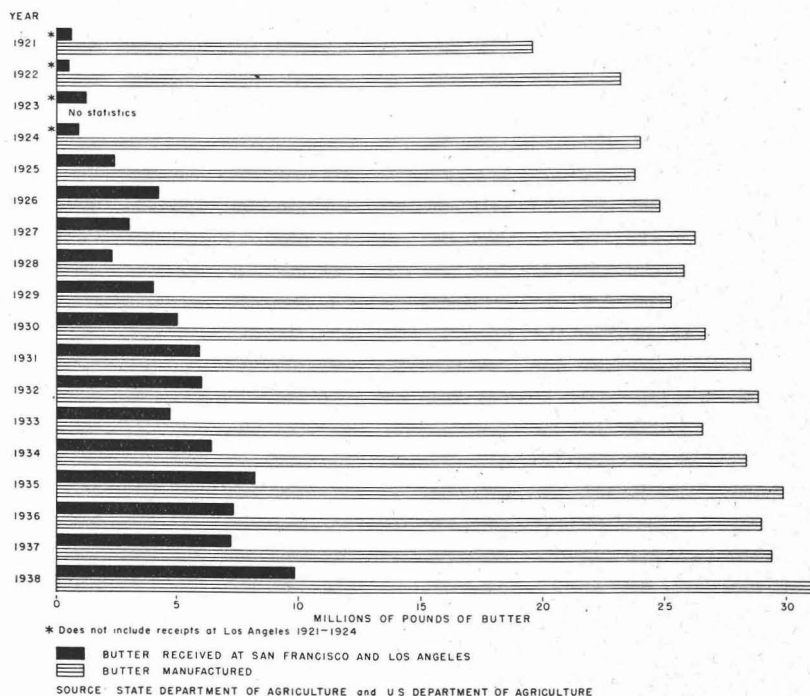


Figure 28.

Oregon should continue to develop and safeguard its market for butter and cheese in California. This calls for a continued program of quality improvement and standardization, but modified from the program of the past 10 years.

Oregon's butter and cheese have been improved in quality so that they are now acceptable to the consumers in Oregon and in California. Improvement must not stop now; it must be perpetual. Perfection can never be reached. Much of the agricultural prosperity

of Oregon depends on the success of Oregon dairy farmers in obtaining a good income from each acre of land that is farmed.

Maximum returns for Oregon butter and cheese sold on out-of-state markets can only be obtained through the full cooperation of dairy farmers, cheese factory and creamery operators, and butter distributors. The farmers' responsibility is along the lines of producing and delivering to the manufacturing plants the highest grades of milk and cream. The manufacturers' responsibility lies in the manufacture of the finest quality of butter and cheese, *uniform from day to day*. The distributors of butter and cheese have as their responsibility the proper storage of the products so as to insure minimum deterioration, the careful packaging of the graded products, and efficient distribution throughout the available markets.

OREGON CHEESE PRODUCTION AND RECEIPTS OF OREGON CHEESE ON CALIFORNIA MARKETS

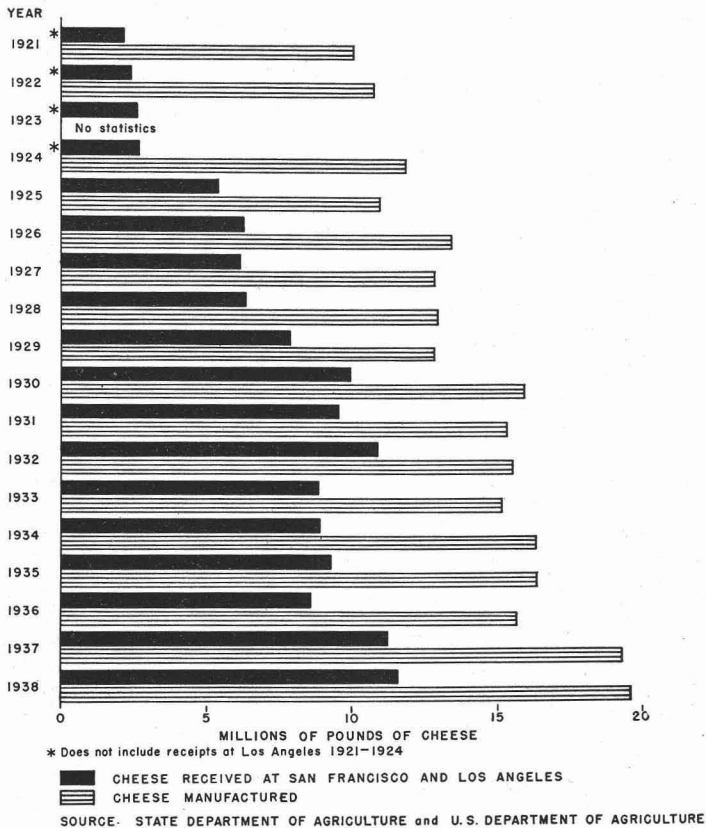


Figure 29.

Table 9. ORIGIN OF BUTTER AND CHEESE RECEIVED AT SAN FRANCISCO AND LOS ANGELES, 1938.

State	Butter	Cheese
	<i>Pounds</i>	<i>Pounds</i>
Arizona	680,938	29,390
California	38,960,390	4,817,261
Colorado	3,050,621	384,905
Idaho	18,420,042	6,034,510
Illinois	464,621	701,248
Indiana		356
Iowa	315,074	24,170
Kansas	253,309	
Michigan	25,200	
Minnesota	805,117	
Missouri	1,136,002	150
Montana	138,665	
Nebraska	1,007,207	
Nevada	41,448	18,580
New Mexico	448,136	
New York		407,274
North Dakota	50,119	
Oklahoma	52,830	
Oregon	9,837,346	11,577,065
Tennessee	61,326	
Texas	2,549,046	615,451
Utah	1,011,932	926,563
Washington	1,452,247	307,812
Wisconsin	144,910	6,385,609
Wyoming	75,190	
TOTAL	80,981,716	32,230,344



Figure 30. The dairy products laboratory at Oregon State College.

Instruction in the grading and handling of milk and cream and the manufacture of dairy products is given to students in the four year course in dairy manufacturing and to dairy plant operators who attend the annual short course held during the winter months.

A PROGRAM FOR THE FUTURE

BUTTER AND CHEESE QUALITY IMPROVEMENT AND STANDARDIZATION

The program of dairy-products improvement outlined during the dairy convention at Oregon State College in 1929 has reached the point where a new program should be developed. The following new program is proposed by the Departments of Agricultural Economics and Dairy Husbandry at Oregon State College:

1. Encourage the production of milk and cream of the highest quality by continuing the compulsory system of purchase in accordance with grade by manufacturing plants.
2. Through research and extension teaching, help producers to overcome difficulties in meeting the specifications for highest quality milk and cream.
3. Develop efficient and economical methods of cooling, storing, and transporting milk and cream to creameries and cheese factories.
4. Through research and education, continue to improve the methods and practices in creameries and cheese factories so that products of higher quality, greater uniformity, and superior keeping quality are manufactured.
5. By investigation in creameries and cheese factories and by experimentation at the central Experiment Station, find the cause for and develop methods of correcting the most serious defects that develop in butter and cheese after they have been manufactured.
6. Study methods for regulating the composition of butter and cheese and through the Extension Service put into effect in the creameries and cheese factories efficient methods for controlling composition.
7. Cooperate with the State and United States Departments of Agriculture in standardizing butter and cheese grades.
8. Through field educational work based on research at the Experiment Station, improve efficiency in cleaning and caring for equipment; and in pasteurizing, handling, and storing butter so that it contains a minimum number of undesirable bacteria and is free from yeasts and molds.
9. Develop methods of packaging and curing cheese that will result in a product that is most acceptable to the consumers.
10. Cooperate with the State Department of Agriculture in developing and putting into effect rules and regulations for standards of proficiency of butter and cheese makers employed in Oregon creameries and cheese factories with the view of raising the standards.