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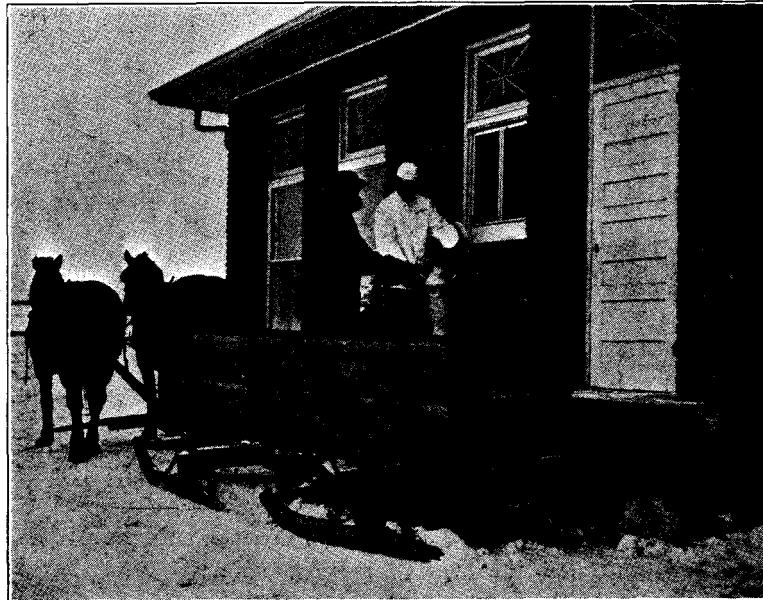
March 1928

UNIVERSITY OF MINNESOTA
AGRICULTURAL EXPERIMENT STATION

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MARKETING COUNTRY
CREAMERY BUTTER BY A
CO-OPERATIVE SALES AGENCY

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DIVISION OF AGRICULTURAL ECONOMICS



UNIVERSITY FARM, ST. PAUL

CONTENTS

	Page
Introduction	3
Co-operative central market organization	5
Business summary	11
Co-operative marketing and quality of product	12
Selling butter co-operatively	28
Sideline enterprises	37
Creamery supplies and equipment	37
Sweet cream	39
Powdered milk and powdered buttermilk	39
Cheese	40
Cottage cheese	40
Milk fat	40
Re-conditioning tubs	40
Churning	41
Eggs	41
Financial organization	41
Other services	43

ILLUSTRATIONS

	Page
Fig. 1. Location of districts and creameries that are members of Land O'Lakes Creameries, Inc.	10
Fig. 2. Organization of Land O'Lakes Creameries, Inc.	11
Fig. 3. Testing butter at Land O'Lakes Creameries, Inc.	15
Fig. 4. A corner of the testing laboratory	16
Fig. 5. Average monthly score of butter marketed by Land O'Lakes Creamery, Inc.	17
Fig. 6. Per cent of total monthly butter received scoring 93 or higher	18
Fig. 7. Part of the print room, Land O'Lakes Creamery	31
Fig. 8. Principal markets for Land O'Lakes butter	33

MARKETING COUNTRY CREAMERY BUTTER BY A CO-OPERATIVE SALES AGENCY

H. BRUCE PRICE¹

INTRODUCTION

Large-scale co-operative marketing of country creamery butter has its roots in the local co-operative creamery movement and its problems. This movement dates back to 1890, in Minnesota, when the first four co-operative creameries were organized. The success of these enterprises encouraged other communities to change from farm dairying to creamery manufacture of butter in rapid succession in the following two decades, with the result that there were 596 local creameries in 1900 and 720 in 1910, a large proportion of which were owned by farmers and operated on the co-operative plan.² The invention of the power separator, the Babcock test, and other creamery equipment was largely responsible for this rapid growth.

The maximum number of co-operative creameries was reached in 1915, when there were 655. This was 75.7 per cent of the creameries in the state. The number of co-operative creameries has decreased slightly since that year, but the proportion of butter made in co-operative factories has gradually increased until it is now approximately two-thirds of the total output of the state.

New and important marketing problems arose as this co-operative movement developed. One of the principal problems was to produce good butter of uniform quality. This became increasingly difficult when the hand separator was introduced and butterfat was delivered to the creamery as cream instead of as whole milk. Frequency of delivery, length of haul, care of cream on the farm and at the creamery, and other factors growing out of the use of the farm separator entered into the problem of quality.

Moreover, there was a lack of that uniformity in quality of butter produced by different creameries and frequently in different churning in the same creamery, that is necessary for economical marketing. For example, high-scoring butter, sold in small lots by a co-operative creamery selling independently, not uncommonly sold below a lower-

¹ E. W. Gaumnitz and G. H. Fredell assisted with the study in its preliminary stages. T. G. Stitts gave valuable suggestions in the preparation of the manuscript. Acknowledgment is also made of the co-operation of the officers of the Land O'Lakes Creameries, Inc., which has made the study possible.

² Anderson, Martin A. The development of the dairy products industry in Minnesota. Minnesota Dairy and Food Department Bulletin 52. 1913.

scoring butter that was uniform in quality and was marketed in large quantity. For this reason local co-operative creameries marketing independently have often been unable to obtain the price that the quality of their product merits.

Co-operative creameries selling individually have also been unable to take advantage of the recent tendency among such large retail distributors of dairy products as chain stores and hotels to buy direct from manufacturers, because of the small quantity of butter that each produces. They have not been able to package, brand, and advertise their product in order to take advantage of the more exacting demands of consumers that have accompanied rising standards of living and rising incomes. The butter of these small enterprises has necessarily been marketed through wholesale dealers, and any advantage of these new marketing methods that the wholesaler may have enjoyed (which was probably small because of the great diversity in quality of product handled) was shared only indirectly as a creamery was able to bargain with the wholesaler in the sale of its product.

Individual co-operative creameries have also been at a disadvantage in selling and distributing their product, preventing competitive wastes, utilizing by-products, collecting claims, and shipping economically. They have been slow to improve upon business practice and develop research. These disadvantages are inherent in small marketing enterprises located long distances from markets. Creamery operators may keep in touch with market conditions, but they are not in a position to get in touch with the best offers and negotiate advantageous sales. Market quotations may be accurate but prices change frequently, so a prospective good market at the time of shipment may be a poor market when butter arrives. Moreover, without a personal representative at the central market, creameries must rely entirely upon the buyer to check the accuracy of weights, time of arrival, quotation at time of sale, and freight or other marketing charges; to inspect the product for condition upon arrival, and to put the product in condition for sale if this is necessary. Wholesale receivers, as a class, undoubtedly try to render these services efficiently, but they succeed in varying degrees and frequently they handle butter in an unsatisfactory manner so far as these services are concerned.

Local creameries, acting independently, can not make much headway in avoiding duplication of co-operative marketing organization. This is recognized by large numbers of co-operative creameries that are supporting proposed legislation which aims to give the state authority to determine whether a co-operative creamery may be organized where one already exists. Only slow progress can be realized in developing by-products—powdered skimmilk or powdered buttermilk—

or in undertaking research in utilizing by-products, sales methods, and advertising, because the local creamery is not the proper economic unit to develop these marketing functions. Only slow improvement in accounting systems, pooling methods, and other business practices may be anticipated because of its isolated position.

These disadvantages are characteristic of all local creameries, whether co-operative or independent, but they do not apply equally to all. Large co-operative creameries, for example, may be able to make better sales than small ones by virtue of a larger output. Co-operative creameries generally keep better records than independents, from necessity. Some creameries do better than others at employing operators who are qualified to handle selling problems. Nevertheless, all country creameries experience these difficulties in some degree when marketing independently.

CO-OPERATIVE CENTRAL MARKET ORGANIZATION

The first important attempt of the co-operative creameries of Minnesota to handle mutual problems and overcome common difficulties is found in the organization of the Minnesota Co-operative Dairies Association. The object of this association was originally and primarily to provide a representative in the central markets and eventually to develop a co-operative sales agency. Some attention was given to the development of a trade mark for Minnesota co-operative creamery butter, to co-operative shipping, and to improvement in quality of butter. Competition with established dealers has been very keen, however, and only small savings by co-operative commission house operation are possible. Moreover, without a standardized product (since little effort was given to improving quality), the association has been unable to take advantage of later tendencies in the marketing of butter. The result is that the organization has never had the support of a sufficiently large number of co-operative creameries, during the 20 years of its existence, to occupy an important place in central butter markets.

The second important attempt to organize co-operative creameries for central marketing resulted in the organization of the Minnesota Co-operative Creameries Association, Incorporated, in June, 1921, later renamed the Land O' Lakes Creameries, Incorporated.

The organizing of this association was preceded by a two-year period of activity in organizing co-operative creameries into district associations. Fifteen such associations were established. Each association was co-operative. Their purpose was to improve the quality of butter, to meet unnecessary and harmful competition, to buy supplies and market butter together whenever it was advantageous to do so, to co-operate with other district associations in promoting the interests of

the dairy industry, and to take up other problems pertaining to the production, manufacture, and sale of dairy products. The management was vested in a board of directors composed of one representative from each creamery belonging to the association.

Funds were not available in most instances to maintain central market representatives or to employ men capable of properly assisting the creameries with manufacture, business practices, or selling problems. A plan of financing undoubtedly would have been developed to employ experts to help with these problems, as it was being worked out in at least one association, if there had been sufficient time. The district units were obviously unsuited to selling a product that is sold in many markets and to various types of dealers. The volume of business was too small, and there was little opportunity for the units to cooperate in advertising, since without unified control of creamery practices, a uniform product could not be produced in the different districts. Hence, plans for a state-wide central organization were soon commanding attention.

The three types of overhead organizations that were given chief consideration were: (1) co-operative centralized creameries, (2) a commission selling agency, and (3) an organization that would standardize, grade, brand, and sell butter. The third plan was accepted as being most suitable to Minnesota conditions. Outside of the cut-over region of the state, where the dairy industry is least developed, co-operative centralizers would have caused much duplication of marketing organization, except as a long-time program. The experience of the Minnesota Co-operative Dairies Association did not encourage co-operative commission house operation. An organization that would emphasize improvement in quality seemed to fit best into the development in butter marketing. Moreover, the experience of the district association that had worked out a financing plan and employed an advisor to creameries, indicated that there were possibilities in improving the quality of butter and at the same time there were possible economies in the purchase of supplies and in co-operative shipping. A federation of co-operative creameries with these objectives was accordingly organized.

There are three distinct parts to this new marketing system, a central organization, the Land O' Lakes Creameries, Inc., district associations, and co-operative creameries. Membership in the central organization is limited to co-operative creameries. Those that are members of the overhead organization are also members of their district associations.

Management of the Land O' Lakes Creameries is vested in a board of directors. One director, known as a "district" director, is elected from each district. Additional directors, known as "association" directors, provide additional representation for creameries having more

than 2500 bona fide stockholders. The Twin City Milk Producers' Association has qualified under this provision. One member of the board is appointed by the Minnesota Commissioner of Agriculture to represent the public interests. The present board has 19 members, 18 representing the district associations and one representing the public. Business is conducted by an executive committee consisting of the officers of the association. A general manager is employed to assist with the work of the organization.

This new butter marketing organization did not materially disturb the management of the creameries that became members of it, as it was originally planned. Each creamery maintained its legal entity and its former type of organization. Patrons continued to be members of the local creamery associations. Each creamery organization still manufactured butter according to methods for which it was largely responsible, sold its butter at a time and place of its own choice, financed the manufacture and marketing of its butter, and had its own local pool. Each member creamery was under contract to help finance the central and district association, but this in no way restricted its methods of selling.

The central association and the district association were merely service organizations which offered services that a member creamery was free to accept or reject. The only obligation that the member assumed was to pay the charges levied to finance the central and district associations. District associations were organized to give the central association more direct contact with member creameries, each with its own board of directors and officers elected by member creameries. It was the basis for representation in the central association. Each district association was financed through a refund of two cents for each 100 pounds of butter shipped. Fieldmen were paid from the central office up to \$2500 per year, above this figure they are paid by the district associations. The direction of the field service was assumed largely by the central office, however, altho there was close co-operation between the central management and the district officials in determining the proper field service program for any district. The principal functions of this district field service were: To assist member creameries to improve and standardize the quality of their output by advising them as to methods of manufacture and preparation for marketing, to demonstrate the grading of cream, to co-operate with members in educational campaigns, to improve the methods of handling milk on the farm, to assist in carlot shipping of butter by arranging for the routing of cars, sometimes distributing expenses and net proceeds from such shipments, and to assist creameries to buy supplies co-operatively.

The central association was also, as previously mentioned, originally a purely service organization and did not attempt to sell butter for members. Small quantities of butter were sometimes sold, but such consignments were discouraged. Much energy was expended in working through the district associations to help with carlot shipping and to some extent to improve the quality of output. Central market representatives were maintained, first in New York City, later in Philadelphia and Chicago, to help member creameries by establishing contacts with wholesale dealers, receiving carlot shipments of butter and notifying wholesale dealers of arrival, handling claims, checking prices paid by wholesale receivers with market quotations, collecting the proceeds of sale and remitting them, less expenses, to shippers, and in various other ways acting as the central market representative of member creameries. The association also retained counsel to advise in legal matters, and early in its development it established a supply department.

The membership agreement was an important feature of this organization. Members agreed to market butter through the organization during the first two-year period, but they might withdraw, upon proper notification, at the end of any year thereafter. This is not a long-term contract, but a short-term agreement which is worthy of notice because it is a new feature of butter marketing in Minnesota. Patrons of co-operative creameries that have attained an important position in the butter industry without the membership contract hesitate to give up the freedom of selecting a market by adopting a membership agreement between patrons and creameries. But in organizing for central marketing they have foregone the privilege of selecting marketing agents in order to stabilize the operations of their own co-operative central marketing organization. The agreement provides for funds to finance the association. A liquidated damage of $\frac{1}{2}$ cent per pound of butter is also provided in case of breach of contract.

The Land O' Lakes Creameries operated under this plan until 1924. In that year, it assumed the responsibility for selling butter. It was decided that sufficient progress had been made in standardizing butter to undertake a selling program. This change in method of operating made necessary a new marketing agreement that provided additional revenue to finance the sale of butter and that authorized the pooling of butter produced by different creameries. Otherwise the two contracts are identical so far as important provisions are concerned.

This new method of marketing was created to function with the old system, and member creameries are now given the privilege of choosing between the two methods. Creameries receive the same field service whether operating under the new or the old system. Creameries

that choose the old method receive the services of the central market representatives. Those electing the new plan, market butter under a pooling arrangement. The organization of the individual creameries and the district associations remains as formerly. The principal change in the central organization has been the development of a sales department. More attention has been given, because of this new arrangement, to the production of a high quality butter and to the development of markets.

The location of creameries that are members of the Land O' Lakes Creameries and the district associations is shown in Figure 1. The district that includes the creameries of the Twin City Milk Producers' Association and that is located in the vicinity of the Twin Cities, is not shown. One district with 25 member creameries is located in Wisconsin. The creameries in this co-operative marketing system are chiefly in the important dairy regions. This is partly because there are more creameries in these sections and partly because dairymen are more interested in improving marketing where butterfat is an important source of farm income.

Figure 2 shows the structure of the central organization. The policies of the organization are determined by a board of directors elected by member creameries. The president of the company, who is also chairman of the board of directors and employed on a salary, is responsible for carrying out the policies. A general manager, appointed by the board of directors, is responsible for administrative duties of a general character. He is also very active in supervising field service and other activities growing out of the relationships of member creameries and the association.

An assistant treasurer has charge of the work of the general office. His principal work is to keep the records and make statistical analyses for the association. All money is handled through his department and remittances to members are cared for.

The machinery and supply department is under a department manager who has charge of the purchase and sale of machinery and supplies for the creameries. The operation of this department will be discussed more fully in a later section.

The sales department has become relatively important as the selling program has progressed. A general sales manager has charge of the marketing of all butter sold through the association, including offices in New York, Philadelphia, Chicago, Boston, and Duluth. The print room is also under his control, as is the marketing of frozen cream, sweet cream, powdered buttermilk, cheese, and eggs, advertising, and Minneapolis and St. Paul distribution.

A credit department has been organized, particularly to assist with distribution. The traffic department is in charge of a traffic manager. This department works out the routings for shipments of butter to the different markets and handles traffic problems. It calculates the freight charges and endeavors so to ship and route cars as to get the best rates possible. Consolidated carlot shipping is now largely under the supervision of this department.

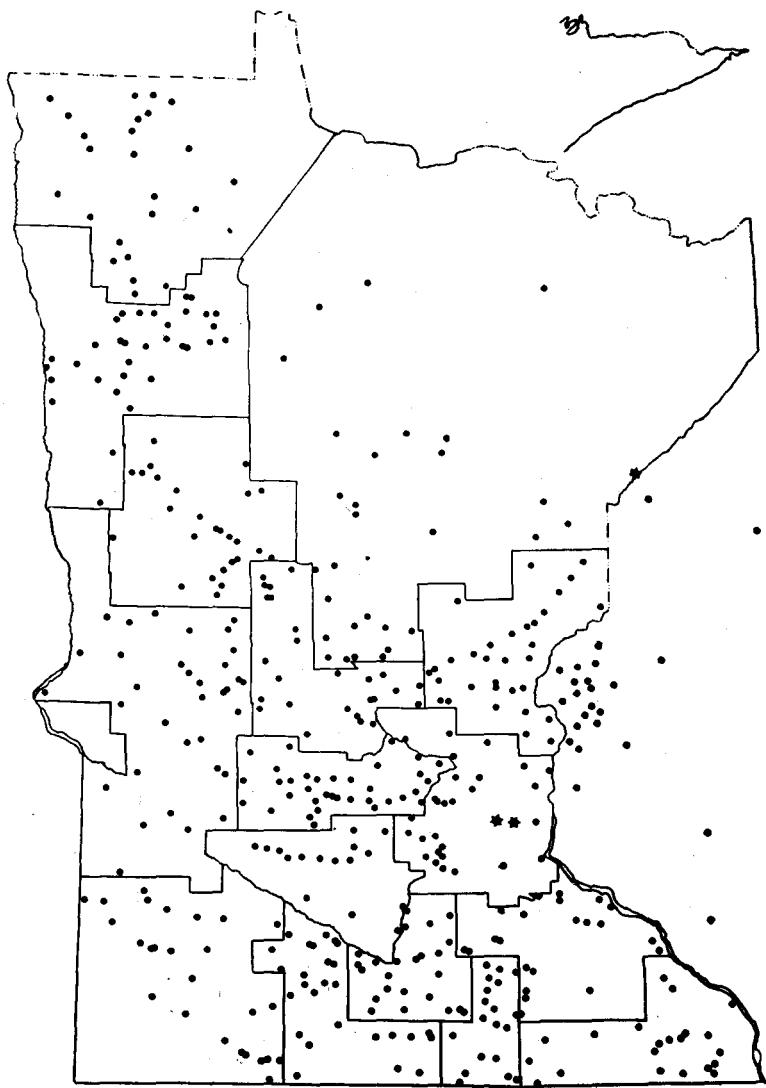


Fig. 1. Location of Districts and Creameries that Are Members of the Land O'Lakes Creameries, Inc.

The laboratory works in close harmony with the inspection department but is under the supervision of the sales manager. Here the butter is tested to see that it meets the requirements for fat, moisture, and salt, and for yeasts and molds. Cream, also, is tested.

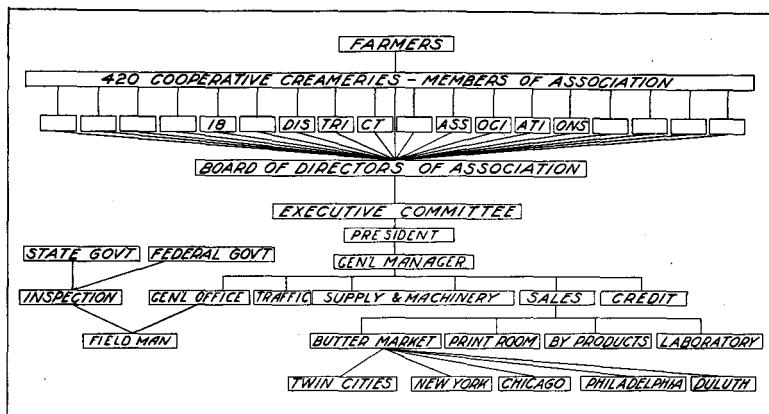


Fig. 2. Organization of Land O'Lakes Creameries, Inc.

The field men work directly under the supervision of the general manager, altho they also work in close co-operation with the inspection department and laboratory in carrying out the program for improvement in the quality of butter.

The inspection department is technically not a department of the Association, but is a federal-state department, apart from the Association itself. The inspectors are under the supervision of the Commissioner of Agriculture of Minnesota and the United States Department of Agriculture. They inspect all butter sold through the association and suggest methods of overcoming defects in quality. A chief inspector has headquarters in Minneapolis and is in charge of the inspection of the association butter at Minneapolis, Duluth, and Chicago.

BUSINESS SUMMARY

About 420 creameries are now members of the Land O' Lakes Creameries, Inc.⁸ All are in Minnesota except 25 in Wisconsin, 1 in Michigan, 1 in Iowa, 4 in North Dakota, and 1 in South Dakota. Approximately 20 creameries are members under the terms of the old marketing agreement and market their butter independently; the others are members under the new pooling and selling arrangement. The number marketing under the old service plan is gradually decreasing

⁸ This number varies with the withdrawal of creameries and the addition of new members, but it has been approximately this figure for 1926 and 1927.

in favor of the butter marketing plan as dairymen become more familiar with the new marketing organization.

Total sales amounted to more than 46 million dollars in 1927, including sales of butter, creamery supplies, and by-products. Nearly 85 million pounds of butter and 470 carloads of cream were marketed. The butter received from Minnesota creameries represented approximately 30 per cent of the total factory butter production in the state and about 40 per cent of the butter made by all co-operative creameries.

TABLE I
SUMMARY OF BUSINESS OF LAND O'LAKES CREAMERIES, INCORPORATED

Year	Butter sold, million pounds	Total annual business, millions
1924.....	32.8	\$14.4
1925.....	79.1	38.9
1926.....	80.6	39.9
1927.....	84.4	46.3

CO-OPERATIVE MARKETING AND QUALITY OF PRODUCT

Central co-operative butter marketing organization in Minnesota has improved the quality of the product both by raising the average score and by producing a product of more uniform quality.

The first prerequisite to reaching the goal of improved quality is a field service guided by expert and central authority, as the problems to be handled are chiefly creamery manufacturing methods and farm dairy practices. The task of the field men is therefore chiefly to assist creamery operators with the manufacture of butter and to help them obtain high-grade raw materials. Incidentally, they do many other things in an advisory capacity, including the purchasing of creamery supplies and dairy equipment, arranging for co-operative shipping, and in other ways giving the member creameries the advantage of their experience and information.

Field men of the Land O' Lakes creameries inspect member creameries and offer suggestions, emphasizing the need of sanitary equipment and good creamery practice. Buttermakers are urged to pasteurize all cream properly and use greater care in making butter. Since a high-quality product is dependent upon good cream, field men are also instructed to give much attention to improving the quality of cream delivered. This part of the field men's work, also, is done in co-operation with operators and officials of member creameries. Generally, a cream grading system is first introduced, as only a relatively small number of creameries differentiate between qualities of cream in paying for butterfat before joining this central co-operative butter selling organization. Creamery patrons are then educated in the use of the

cream grading system. This is an important feature because of the opposition and misunderstanding that frequently exists.

Field men and creamery operators work with patrons to improve the quality of cream. Farmers are urged to care properly for separators and dairy utensils and to adopt better methods of cooling and handling cream. Frequency of delivery is also emphasized. This educational work is carried on through contacts with farmers when they deliver cream to the creamery and by farm visits of field men, operators, and even committees of creamery members when intensive cream improvement campaigns are conducted. Assistance is given dairymen in locating the causes for poor quality, and suggestions are offered for removing the sources of contamination. Many cream cooling tanks have been installed on farms as a result of this work. Mention should also be made of the assistance which the central organization renders in this work directly through its official organ, "Land O'Lakes News," and by many addresses made by officials at meetings of dairymen; and indirectly through competition in the sale of farm coolers, designation of a creamery as being a Land O'Lakes Creamery when a given proportion of its output meets the specifications of the association Land O'Lakes brand, and in other ways that encourage patrons to deliver a better quality of raw material by appealing to their pride in their product and their marketing organization.

In order to meet the objection that is often raised to cream grading on the ground that the quantity of low-grade cream is too small to churn economically, the central organization has arranged for the disposition of such cream. At one time an agreement was made with a Twin City creamery to buy any cream that a member creamery might ship in, the weighing and testing to be done under the supervision of Land O'Lakes Creameries. At present, all of this cream shipped from the creameries is purchased by the central organization for manufacture in its own creamery department.

A butter inspection and a butter analysis service have been developed to assist in the standardization program as well as to facilitate marketing. These services are particularly valuable to creameries marketing through the sales department; those shipping direct to wholesale dealers do not realize these benefits because the association does not receive samples of their butter. They are also important aids in developing sweet cream butter, adopted by the association as the only kind to be sold under its brand. Formerly butter was made chiefly from sour cream. Now the delivery of cream that is perfectly fresh, sweet, free from off-flavors and objectionable odors, and low in acidity is more important, as it is necessary for the production of sweet cream butter. New methods of manufacture have been introduced for this

new type of butter. No neutralizer or starter may be used in churning. The cream must be perfectly pasteurized, then cooled to 45 degrees, Fahrenheit, or lower, and held at that temperature for three hours before churning. Hence the need among member creameries for information and field service that will bring about changes in operating methods and farm practice.

The first step in the development of an inspection service was therefore to adapt the grades to the new type of butter. A new grade providing for sweet cream butter scoring 93 or higher was accordingly included in the commercial grades, as used by this association, which were the basis for the new grading system.

Sweet cream butter is described as having a mild, sweet, and pleasing flavor, a firm body with a waxy texture, and a light straw color free from streaks and mottles. The salt and moisture must be well incorporated in the butter and the salt content must be within the range of 2.0 per cent as the minimum and 2.5 per cent as the maximum. It must be packed in standard spruce tubs containing 63 or 64 pounds net, depending on the season of the year, paraffined, lined with parchment paper, and finished with a cloth and a parchment circle on top. A creamery may not mark the tubs except with a stencil supplied by the association, the stencil including the number of the creamery, the churning number, and the net weight.

The next step in inspection was to develop an organization to grade butter at concentration points. Grading was originally done by inspectors employed by the association, but this was not satisfactory. It was an improvement over the previous method of shipping butter, when only occasional inspection was requested because it furnished valuable information to creameries, but dealers attached little significance to the grades of private inspectors. Consequently, arrangements were made in 1924 with the Minnesota State Department of Agriculture and the United States Department of Agriculture for official inspection at concentration points. A co-operative agreement between these agencies provided for a joint federal-state inspection, with the Minnesota Commissioner of Agriculture acting as the trustee for the project. The federal-state inspection organization works in close co-operation with the Land O'Lakes Creameries under the supervision of a chief inspector. Inspectors are located at Minneapolis, Duluth, and Chicago.

This inspection service, it should be noted, is merely an extension of federal butter inspection that has been given in a few large butter markets for several years and that is adapted to the new co-operative method of marketing. Moreover, altho this part of the service is established primarily for Land O'Lakes Creameries, anyone can obtain inspection upon request. Nominal fees established by the United States

Department of Agriculture and fixed on the basis of the approximate net weight of butter are charged.⁴

Since the policy of the Minnesota and the federal governments has not been to provide inspection service for agricultural products at a profit, special arrangements as to charges have been made with the Land O'Lakes Creameries because of the large volume of product inspected. The actual cost of the service is therefore charged instead of the regular fees. The cost of the inspection service to the association for 1926 averaged about 3 cents per hundred pounds.



Fig. 3. Testing Butter at Land O'Lakes Creamery

All butter now marketed through the association receives an official inspection as soon as it is received and before it is put on the market. As a creamery number and a churning number are put on all packages of butter, the inspector is enabled to inspect a tub from each churning.

⁴ U. S. D. A. Service and Regulatory Announcement No. 79, Rules and regulations governing the inspection of butter, cheese, and eggs, p. 4.

"(a) When each separate churning is not indicated by number or otherwise on the package—

For 1,500 lbs. or less.....	\$1.00
For more than 1,500 lbs. but not more than 3,000 lbs.....	1.50
For more than 3,000 lbs. but not more than 6,000 lbs.....	2.00
For more than 6,000 lbs. but not more than 10,000 lbs.....	2.50
For each additional 10,000 pounds or fraction thereof beyond 10,000 pounds an additional amount of.....	.50

"(b) When each separate churning is indicated by number or otherwise on the package—

For seven churnings or less.....	\$1.00
For each additional churning beyond seven, an additional charge of	.10"

He reports the creamery number, the churning number, the weight, and the score of the butter. He also notes any low scores, reasons for poor quality, and suggestions for improving the quality of butter in future shipments. Copies of these reports are sent to all interested persons, including the secretary of the creamery, the creamery operator, the State Department of Agriculture, the field man in the district in which the creamery is located, and the inspectors' and the association's files.

A laboratory, independent of the butter inspection service but operated in close co-operation with it, is also maintained to test each churning of butter received for fat, moisture, and salt content. Standards for these factors have been established, and any deficiencies are promptly reported to creameries with the report of the federal-state inspectors. When butter is deficient in fat it is returned to the creamery that made it to be re-worked or it is re-worked by the Association. Much research has recently been done through this laboratory and in co-operation with the Dairy Division of the University of Minnesota to discover the reasons for objectionable flavors and deterioration in the quality of butter,

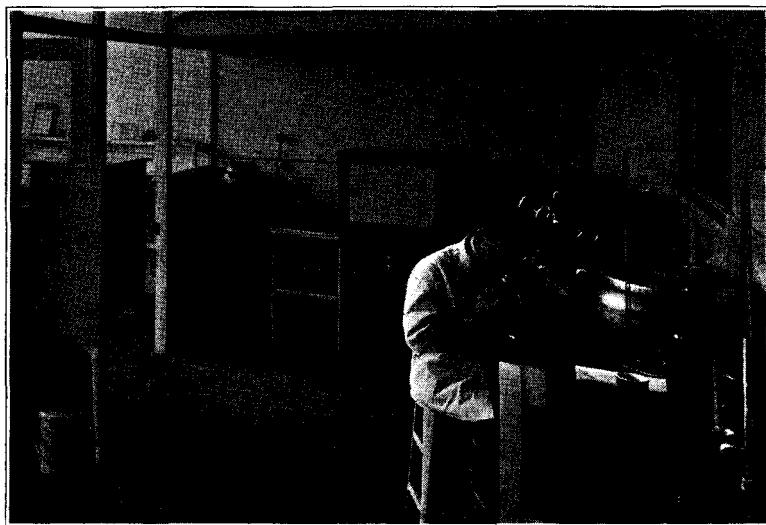


Fig. 4. A Corner of the Testing Laboratory

particularly as they have been affected by yeasts and molds. As a result, the field service department is much better qualified to advise creameries regarding improvements in sanitation and concerning sources of yeast and mold contamination, many of which are not suspected by creamery operators. Outstanding examples of the value of such research work are the practical recommendations made to members to sterilize equip-

ment used for handling buttermilk and not to haul buttermilk in cream cans, after buttermilk utensils and equipment were found to be the most common sources of mold infection. As a result, large losses that would otherwise have been incurred have undoubtedly been avoided.

The effect of these policies has been to raise the average score of butter marketed by member creameries. The improvement in quality in the three years that butter has been marketed under the selling plan and for which data are available, is substantial. Progress does not appear to have been as great during the first year, as will be noted from Figure 5, as during the two subsequent years. The apparent abnormal seasonal variations from February, 1924, to June, 1925, were due to the large number of new creameries from which butter was received during this period. This is well illustrated by the relatively low average quality of butter in the winter and spring of 1925 following the acceptance of seventy-five new member creameries in January of that year whose butter was much below the average quality of that of other creameries then marketing through the association. Since January, 1925, approximately the same creameries have been members under the terms of the marketing agreement, and the quality of butter, when compared for comparable periods, has steadily risen.

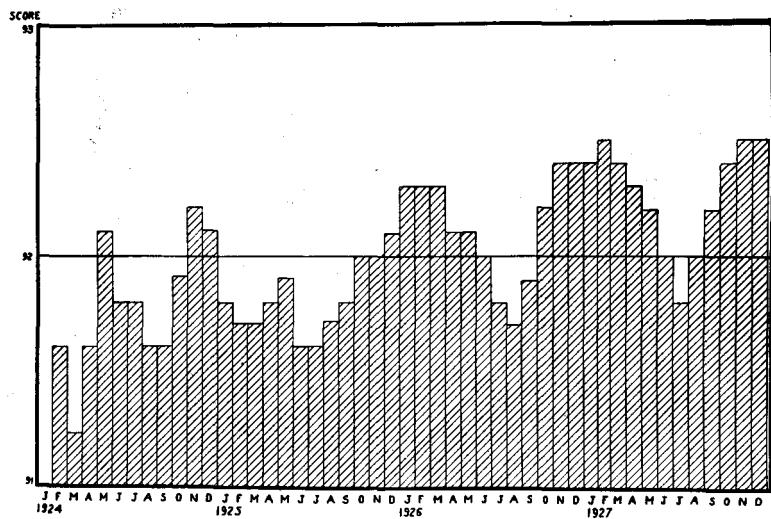


Fig. 5. Average Monthly Score of Butter Marketed by Land O'Lakes Creamery, Inc.

The principal change in the distribution of butter among scores that has been responsible for this improvement in quality is the large increase in the amount of butter scoring 93 or higher and the decrease in the percentage of butter falling within every other score. This score is shown graphically in Figure 6, which, like Figure 5, shows substan-

tial progress in raising the score of butter when the same months of different years are compared. The distinct seasonal variations in quality, indicated in both Figure 5 and Figure 6, are due chiefly to climatic conditions; also partly to variations in the pressure of farm work at different seasons of the year which affect the care in the farm handling of cream and the frequency of delivery to creameries. Only a large amount of educational work by an overhead organization can make much headway with this aspect of the problem.

Three things should be said about the data upon which Figures 5 and 6 are based: (1) They do not show any change in the type of butter produced or improvement in uniformity of quality. The proportion of sweet cream butter has steadily increased during this period. More than 95 per cent of the butter scoring 93 or better is now made

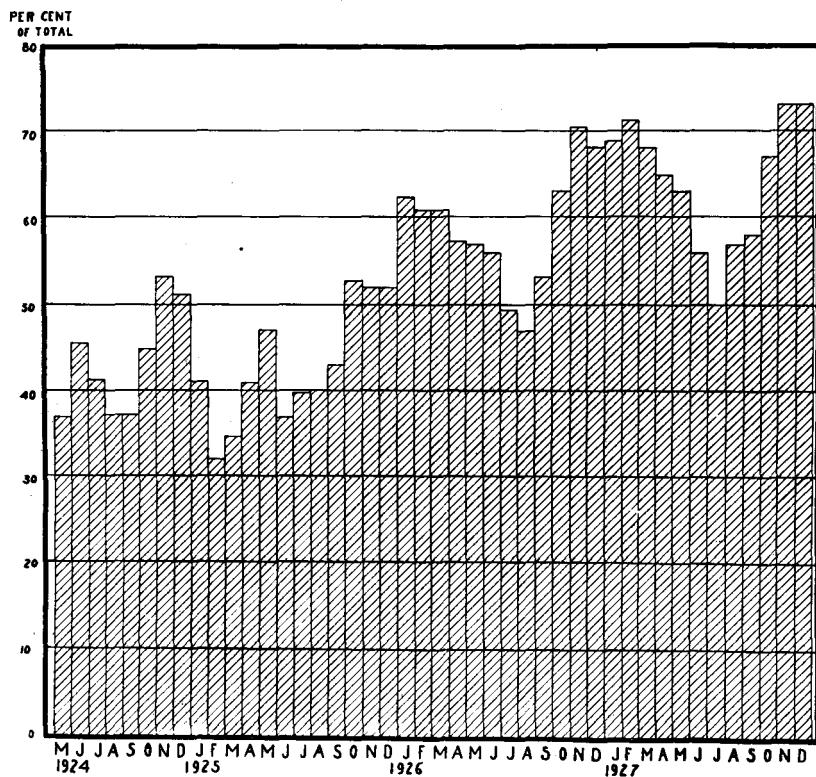


Fig. 6. Per Cent of Total Monthly Butter Received Scoring 93 or Higher

from sweet cream. Moreover, altho there is some complaint among dealers and consumers about differences in quality of different lots of butter of the same score, the quality is unquestionably more uniform than when these creameries were marketing independently. (2) The

data understate the progress made. Not only have the sales of sweet cream increased during 1925 and 1926, thus reducing the amount of high-scoring butter, but many creameries, as will be pointed out later, have sold high-scoring instead of low-scoring butter locally as a part of the sales policy of the central organization.⁵ A small quantity of butter scoring 94 and 95 has also necessarily been included as 93 because of the records available. (3) The data are averages of all creameries. They merely show what has happened to the score of butter for the creameries as a group.

TABLE II

TWO-MONTHS COMPARISON OF QUALITY OF BUTTER PRODUCED BY CREAMERIES THAT MARKETED THROUGH LAND O'LAKES CREAMERIES IN 1924, 1925, AND 1926

Amount of gain or loss in score	At end of first year		At end of second year*	
	No. of creameries showing gain	No. of creameries showing loss	No. of creameries showing gain	No. of creameries showing loss
0.0-0.2	30	20	14	16
0.2-0.4	25	16	24	8
0.4-0.6	27	7	22	4
0.6-0.8	25	8	34	1
0.8-1.0	18	3	28	2
1.0-1.2	14	1	14	0
1.2-1.4	6	0	11	1
1.4-1.6	3	1	8	0
1.6-1.8	3	0	4	0
Over 1.8	4	0	9	0
Total	155	56	168	32
No gain or loss.....	16		5	

Av. gain at end of one year..... 0.4 At end of two years..... 0.7+

* Twenty-one creameries marketing butter in 1924 and 1925 did not market butter through Land O'Lakes Creameries in 1926. This was due partly to withdrawal from the association and partly to a change in policy from shipping butter to shipping cream.

Records of individual creameries for comparable periods show that they succeed in raising the score of butter by different amounts. Some creameries have a very fine record; others make little or no headway. A comparison of the scores of butter shipped by 227 creameries during the first two months that they marketed butter through the Land O'Lakes Creameries, in 1924, and for the corresponding months in 1925 reveals the interesting fact that 155 creameries, or 68 per cent; raised the score of butter from 0.1 to over 1.8 points, while 56 creameries, or 25 per cent, were marketing a lower-score butter at the end of the first year. Sixteen creameries neither gained nor lost. (See Table I.)

Of this group the creameries showing gains more than offset those showing losses, partly because many more show gains than show losses, and partly because the gains of individual creameries were much larger

⁵ The data in Figures 5 and 6 represent only the butter shipped to the Land O'Lakes Creameries and do not include butter sold in local markets.

than the losses. For example, 30 creameries gained more than one point during the first year and only two had corresponding losses. The result was that the average gain of the entire group was 0.4 at the end of one year and 0.7 at the end of two years. This is a substantial gain for a large group of creameries, particularly when one considers that the average score of butter when they began marketing through the Land O'Lakes Creameries was 91.6, and the goal of perfection by our method of calculation is 93.⁶ In the first two years, the creameries as a group had realized 50 per cent of the possible improvement in quality at the time they began marketing through the Land O'Lakes Creameries.

Some of the variations in progress of individual creameries are due to changes in policy that do not affect the improvement program but for which correction could not be made with available data. Creameries that began to sell second-grade cream during this period no doubt substantially raised the score of butter produced, and those that began to substitute high-grade butter for second-grade in the local market probably lowered the average score of that shipped to the co-operative sales agency. It is not probable that such circumstances explain a very large percentage of the progress made in improving quality, however. Forty-three per cent of the creameries report that they sold their second-grade cream during this period but, as shown in Table II, such creameries are relatively well distributed among the groups making different progress. Approximately one-third of the creameries also report that they have adopted a policy of selling high-grade butter, but these creameries, also, are evenly distributed among the groups given in Table II. Moreover, the progress made by this group in the second year (see Table I), 76 per cent showing improvement, indicates that the rate of progress is probably affected in large measure by factors within the control of individual creamery organizations.

TABLE III
RELATION OF SALE OF CREAM AND LOCAL SALE OF BUTTER TO IMPROVEMENT IN QUALITY
OF BUTTER MADE BY 130 CREAMERIES, 1924-26

Amount of gain or loss	No. of creameries	Percentage of creameries selling low-grade cream	Percentage of creameries changing from local sale of low- to high-scoring butter
Gain over 1.0.....	29	48	38
Gain 0 to 1.0.....	83	47	39
Loss	18	33	38

To determine the relative importance of the factors affecting progress in the manufacture of a better butter is difficult, particularly as

⁶A higher score is impossible because the small quantity of butter scoring over 93 was included with that scoring 93. As previously pointed out, this grouping of the high-scoring butter was made necessary by the available records.

some of the important factors, such as the attitude of the buttermakers and patrons toward a quality improvement program or the nature of the local competition, can not be measured. Available data do indicate, however, that there is a clearly defined relationship between certain policies and success in raising the quality of output. Improvement seems to be closely associated with grading cream and the policy of restricting the time and frequency of delivering cream. Table III shows that 62 per cent of the creameries gaining over 1.0 in score began grading during this 10-year period, 40 per cent of those gaining between 0 and 1.0 began grading, and only 28 per cent of those showing no gain began grading. About 20 per cent of this group of 130 creameries began grading before they joined the Land O'Lakes Creameries or before they began marketing butter under the new marketing agreement. About the same proportion of creameries in the different groups in Table III were grading before they began selling butter co-operatively in the central market.

A closer analysis of the relationship of grading and improvement in score indicates that grading is not equally effective at all creameries. Operators do not take equal advantage of the educational opportunities offered in connection with the grading of cream; variation in local competition does not permit the same close observance of the grading policy; different grading policies vary in emphasizing among patrons the importance of delivering good cream.

Nearly 95 per cent of 213 creameries reporting on their cream-grading policy have two grades, and about 5 per cent have three grades.

TABLE IV
RELATION OF GRADING CREAM TO IMPROVEMENT IN QUALITY OF BUTTER MADE BY
130 CREAMERIES, 1924-26

Amount of gain or loss	No. of creameries	Percentage of creameries grading cream	Percentage of creameries starting grading between 1924 and 1926
Gain over 1.0.....	29	83	62
Gain 0 to 1.0.....	83	81	40
Loss	18	58	28

Three creameries accept only a high-quality product. The differentials paid for the different grades vary among creameries. The most common discounts paid for second-grade cream are 2, 3, and 5 cents, altho higher and lower discounts are occasionally provided for, as will be noted in Table IV.

An occasional creamery bases the differential entirely upon the price received for the different grades of butter. Creameries having three grades of cream generally discriminate 2 or 3 cents between the first and second grades, and also between the second and third grades. It

is impossible to determine, with available data, the relative importance of the different grading policies in the quality improvement programs. Undoubtedly large differentials in prices paid for different grades of cream have a tendency to produce results more quickly than low differentials, altho the rate of improvement is affected by such important factors as the nature of local competition and the attitude of patrons toward producing a better product.

TABLE V
DIFFERENTIALS PAID FOR DIFFERENT GRADES OF CREAM AMONG CREAMERIES
HAVING TWO GRADES

Differentials	No. of creameries
cents	
1.....	2
2.....	37
3.....	86
4.....	7
5.....	38
6.....	1
8.....	1
10.....	1

Closely associated with cream grading and often developing at the same time, are restrictions of the time and frequency of delivery by patrons. More than 95 per cent of the creameries reporting on this point have some kind of delivery regulations. The diversity of restrictions and the wide variations in the time when such restrictions were adopted make it difficult to show any relation between these practices and improvement in quality. Many creameries, particularly in the principal dairy districts, had them before they joined the Land O'Lakes Creameries. That there is a direct relationship is not doubted, however. Early and frequent deliveries provide better raw material than would otherwise be received. Early deliveries may also allow better handling of cream in the creamery.

Hour of delivery is a more common restriction than day of delivery. Forenoon delivery is the most common restriction. Two o'clock is the second most common, and three o'clock is third. Relatively few creameries permit delivery after 3 p.m. Frequency of delivery generally varies between winter and summer. Three times a week in the winter and four times in the summer as a minimum, are the most common. These restrictions are recommended by the Land O'Lakes Creameries for members producing sweet cream butter. A surprisingly large number of creameries require daily delivery of cream during periods of high temperatures and four deliveries a week during the winter. It is significant to note that the creameries of the districts that have the most exacting regulations are at the head of the list of all districts from the standpoint of average score of butter produced.

The amount of time devoted by creamery operators and field men to problems of farm production and farm handling of cream, also explains some of the variations in quality. Creameries doing the largest amount of field work make the most progress. This is well illustrated in Table VI, which shows that of creameries gaining over 1.0 in score, 31 per cent did more than 10 days of special field educational work among patrons while none of the creameries showing no gain did as much intensive work. Many creameries in all groups did a small amount of intensive work among patrons, but so far as this study is concerned, less than 10 days of intensive field work shows no effect upon quality of creamery output. Evidently what is needed in field service work among patrons, as in any type of educational work, is well established contacts between the teacher and the student, with frequent renewal of contacts.

TABLE VI
RELATION OF FIELD SERVICE AMONG CREAMERY PATRONS TO IMPROVEMENT IN QUALITY
OF BUTTER MADE BY 130 CREAMERIES, 1924-26

Amount of gain or loss	No. of creameries	Percentage of creameries doing special work	Percentage of creameries doing less than 10 days special work	Percentage of creameries doing over 10 days special work
Gain over 1.0.....	29	55	24	31
Gain 0 to 1.0.....	83	25	20	5
Loss	18	38	38	0

The sale of coolers especially adapted to farm handling of cream is one of the specific services rendered by creameries to the dairy industry. More than 3000 farm coolers, purchased through the supply department of the Land O'Lakes Creameries, were sold to patrons in 1925 and an even larger number in 1926. Some coolers bought from other agencies were also sold. The effect of this improvement in farm equipment on the quality of cream is difficult to measure. It doubtless is considerable. Where the number of coolers sold is small, the effect upon the quality of butter produced by a creamery is not perceptible. About the same percentage of creameries in the different groups, arranged according to progress made, as is indicated in Table VII, have sold farm coolers. A much larger percentage of the creameries selling more than 10 coolers are included in the group making gains of more than 1.0. An even greater percentage of creameries selling a larger number of coolers falls within the group making the greatest progress. Undoubtedly the use of a few farm coolers affects the average quality of cream received by a creamery, but not enough to become evident by the method of analysis here used.

It is significant that 9 member creameries each sold more than 50 farm coolers purchased from the central co-operative organization in

a single year, and that 48 sold more than 25. These figures include all creameries that are members of the Land O'Lakes Creameries and are not restricted to the 130 creameries included in Table VI.

TABLE VII

RELATION OF SALE OF FARM COOLERS TO IMPROVEMENT IN QUALITY OF BUTTER MADE BY
130 CREAMERIES, 1924-26

Amount of gain or loss	No. of creameries	Percentage of creameries selling farm coolers	Percentage of creameries selling 10 or more coolers
Gain over 1.0.....	29	90	80
Gain 0 to 1.0.....	83	84	48
Loss	18	82	50

Two things should be said about the policies affecting the quality of cream delivered by patrons. (1) They frequently are all effective at the same time, often they are all undertaken as a general policy to improve the quality of butter, and they all tend to have the same effect upon the quality of output. For this reason, it is impossible to determine the relative importance of any given policy. (2) The introduction of these policies often produces satisfactory results more quickly than is suspected. Data from 14 representative creameries that were known to have started a campaign to improve the quality of butter, show this strikingly. The average score of butter was 91.2 for the two months preceding the campaign, 91.7 for the month the campaign was started, and 92.1 for the two succeeding months.⁷

Facts regarding these creameries do not indicate to what extent they combined the sale of farm coolers, farm visits, delivery restrictions, and other policies that affect farm methods of handling and delivering cream. It is only known that grading was started and a policy to improve the quality of butter was adopted. Perhaps some of the improvement was due to a changed technic in the manufacture of butter. The significant thing, however, is that rapid progress in improvement may be effected when there is unity of purpose in a creamery organization. In these creameries, 50 per cent of the difference between the score before grading and 93, the highest commercial grade of butter, was realized within three months.

Such factors as the attitude of operators and patrons, local competition, and attitude and qualifications of field men, also undoubtedly affect the rate of improvement in the quality of butter but, as previously mentioned, they can not be accurately measured.

Keen local competition often causes lax enforcement of grading and delivery regulations in order to retain patronage. Twenty-two creameries out of 235, for example, report 5 or more local competing cream

⁷ The effect of seasonal variation was eliminated in this calculation, at least in part, by selecting creameries that started the campaign at different times during the year.

stations and 100 report 2 or more. To adopt strict rules of grading or delivery under such competitive conditions may seriously reduce volume, altho few creameries report a loss of patrons as a result of their grading programs. The average number of competitors reported by creameries showing a gain in score was 1.4, whereas the average number of competitors for creameries showing no gain was 2.2.

The attitude and ability of creamery operators are factors in a quality improvement program. Their effect is indicated, at least in part, by Table VIII. Only 1 creamery in the group showing no gain changed operators during the period studied, whereas 8 creameries, or 27 per cent of the group showing the most progress, changed operators. These data should not be interpreted as indicating that a large percentage of creameries should change operators, but they do point out the desirability of employing a buttermaker who has a willingness and the ability to co-operate in a program to produce a better product. The spirit in which dairymen enter into a program of this kind is also undoubtedly an important factor in explaining different rates of progress, altho no data are available to indicate its importance.

TABLE VIII
RELATION OF EMPLOYMENT OF BUTTERMAKERS TO IMPROVEMENT IN QUALITY OF BUTTER
MADE BY 130 CREAMERIES, 1924-26

Amount of gain or loss	No. of creameries changing buttermakers	Percentage of creameries changing buttermakers
Gain over 1.0.....	29	27
Gain 0 to 1.0.....	83	17
Loss	18	5

Improvement in quality of butter is closely associated with volume and average score of output when a creamery undertakes to market a better product. Creameries with large output tend to make the most rapid progress, as do also those with a low-scoring butter.

One reason for this is that creameries having a low-scoring product have greater opportunities for improvement. Another reason is that those with a small volume are generally located outside the principal dairy sections where relatively more field work must be done to obtain the same improvement in quality of cream. It is also reasonable to assume that creameries with a small output are generally not able to employ managers as competent in making butter and doing educational work among patrons as large creameries.

These conclusions seem to be substantiated by the relatively small number of coolers sold among small creameries; and by the smaller percentage that have grading and delivery rules and that give special field service to patrons.

TABLE IX

RELATION OF VOLUME OF BUSINESS AND SCORE OF BUTTER TO IMPROVEMENT IN QUALITY
OF BUTTER MADE BY 130 CREAMERIES, 1924-26

Amount of gain or loss	No. of creameries	Average annual volume of business (ooo omitted)	Score of butter when starting to ship to Land O'Lakes Creameries
Gain in score—			
Over 1.8.....	5	393	90.1
1.6-1.8.....	4	239	90.6
1.4-1.6.....	6	352	90.8
1.2-1.4.....	7	177	91.0
1.0-1.2.....	7	258	91.2
0.8-1.0.....	19	317	91.6
0.6-0.8.....	22	302	91.3
0.4-0.6.....	18	265	91.6
0.2-0.4.....	13	282	91.6
0.0-0.2.....	11	358	91.7
Loss in score—			
0.0-0.2.....	10	205	91.3
0.2-0.4.....	5	144	91.2
0.4-0.6.....	1	188	91.2
0.6-0.8.....	1	74	91.5
Over 0.8.....	1	107	92.1

Greater uniformity in quality of product has also been obtained by the Land O'Lakes Creameries, chiefly by laboratory analysis of butter, which furnishes information as to its character. The butter received from each member creamery is graded according to established standards of workmanship for body, color, and package; and according to standards of composition for moisture, salt, and butterfat content. The results of the analyses are made available to field men, creamery operators, and creamery officers. More recently, laboratory tests have been made for yeast, molds, and bacteria, which affect the flavor and storing quality of butter.

One of the most successful as also one of the most significant features of this work is the standardization of the fat content of butter. A standard of 80.7 per cent was adopted, as this figure was thought to be well within the limits of probable error when buttermakers are striving to approximate the legal minimum of 80 per cent. The effect of the attention given to this factor in the composition of butter has been to reduce the average fat content. The data in Table X, for example, showing the distribution of creameries among the different fat-content groups, indicates that there was a distinct tendency to reduce the fat content of butter during the first year that the Land O'Lakes Creameries gave special attention to the problem. The average fat content declined from 81.6 in July and 82.1 in August, 1924, to 81.2 and 81.0 in May and June of the following year. The distribution of creameries according to the different percentages of butterfat content also shows that a

larger percentage were more nearly approaching the ideal of composition at the end of the year. Some occasionally produced butter of a fat content far in excess of the 80 per cent minimum. Others produced butter with a fat content below the legal requirements. Such butter is handled by the Land O'Lakes Creameries in a manner fitting the circumstances. Butter that is deficient in fat is returned to be reworked or, more generally, remade by the manufacturing department of the association at the expense of the offending creamery. Butter with an excess of fat is often used in the manufacture of milk fat.

TABLE X
DISTRIBUTION OF CREAMERIES BY MONTHS ON THE BASIS OF THE AVERAGE PERCENTAGE OF FAT IN BUTTER, JULY, 1924 TO JUNE, 1925

Percent- age of butterfat	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
78.0-78.5	1
78.5-79.0	1	..	..	..	1	..	..	2	3	
79.0-79.5	1	..	..	..	1	..	1	1	6	
79.5-80.0	2	..	1	2	..	2	8	4	5	4	19
80.0-80.5	1	9	12	12	3	6	12	25	14	22	37
80.5-81.0	13	19	48	29	22	30	38	40	39	76	91
81.0-81.5	15	48	61	63	45	45	76	66	78	96	102
81.5-82.0	31	50	42	53	52	64	74	82	71	80	67
82.0-82.5	13	32	31	41	50	59	49	52	64	52	30
82.5-83.0	6	13	32	25	31	43	29	32	48	19	13
83.0-83.5	3	11	5	7	13	21	15	20	21	6	7
83.5-84.0	5	3	2	3	13	2	9	9	2	..	2
84.0-84.5	2	3	2	2	8	2	5	2	..	1	..
84.5-85.0	1	..	..	1	5	2	3	1	1	..	..
85.0-85.5	1	1	..	2	2	..	..	..
85.5-86.0	1	..
86.0-86.5	1	1	..	..	..
86.5-87.0
87.0-87.5
No. of creameries	85	189	230	236	233	295	301	347	354	360	356	348
Av. butterfat content	81.6	82.1	81.5	81.6	81.8	82.1	81.7	80.8	81.6	81.2	81.2	81.0

Special attention has been given in recent months to sanitation in member creameries. During the first six months of this work, about fifty per cent of the member creameries were inspected and the plan is to include all creameries at the earliest opportunity. The inspections are made by the district field men in co-operation with the laboratory. A district field man or occasionally a representative from the association, obtains samples of cream, water, and butter from a creamery for examination at the laboratory. Creamery operators, as well as interested officials, are then notified of the sources of contamination and advised regarding improvement measures. In order to facilitate this improvement, the building and equipment are cleaned and another set

of samples is obtained before the field man leaves, in order to determine how thoroly the cleaning has been done. Future shipments of butter are tested regularly, and the operator is informed of the progress made. If contamination recurs another inspection may be made.

Many samples of butter are stored under conditions of commercial storage in order to determine the effect of yeasts and molds on the keeping quality. These samples also serve as valuable checks on the quality of transportation service, particularly when butter is shipped to distant markets, or on the service of storage warehouses where the butter is bought by dealers and stored for a considerable time. The laboratory analyses, as well as the inspection service, thus give the managers of country creameries information which will help them to produce butter of more uniform quality as well as of higher score than is available to creameries operating and marketing independently.

The various efforts of the Land O'Lakes Creameries are now being co-ordinated and the results of inspection and laboratory analysis are being summarized monthly for member creameries. This furnishes a measure of the efficiency of the creamery operator that can be used as a basis for measuring progress and comparing the achievements of buttermakers of different creameries. Experiment along this line with the creameries in one district has proved so valuable that plans are completed to extend the service to all member creameries.

No accurate measure can be presented of the effect of many of these efforts of the Land O'Lakes Creameries upon the quality of butter. The laboratory analysis has been started too recently and measures for many of the factors that determine quality of butter—body, color, and package—are too indefinite for accurate measurement. It is reasonable to assume, however, that butter of more uniform quality and package should be produced if creamery managers utilize the information and advice provided by the experts of the central organization.

SELLING BUTTER CO-OPERATIVELY

The Land O'Lakes Creameries undertook to sell butter for member creameries chiefly to take advantage of the tendency of large users of butter to buy large quantities of a uniform quality and of the economies of more direct selling. Other advantages may be realized, but they are probably of minor importance.

The common practice of Minnesota co-operative creameries that do not sell co-operatively in the central markets is to sell butter to wholesale receivers in a few large markets. Some creameries develop special outlets—dining cars, hotels, hospitals, schools, and retail stores in large cities—but these sales represent only a small percentage of the butter

marketed because local creameries do not produce enough butter of sufficiently uniform quality to permit economical marketing in this way. Butter is sold chiefly to wholesale receivers in New York City, Philadelphia, and other markets. Minnesota Technical Bulletin 26⁸ shows that in 1919 and 1920, 5.4 per cent of the butter produced by local creameries in Minnesota was sold to creamery patrons, 7.2 per cent was sold to others locally, and the other 87.4 per cent was shipped. Of the butter shipped, 54 per cent went to New York City, 19 per cent to Philadelphia, 16 per cent to other points, chiefly in the East, 2 per cent to Chicago, and 9 per cent to Minnesota cities.

The new co-operative selling program necessarily calls for new marketing technic and a redistribution of the butter supply among wholesale markets, if the objectives of co-operative selling are realized. Assembling butter near points of production for inspection, grading, weighing, and consolidation into carlots was one of the first important changes in the new selling program. Arrangements have been made with the railroads to concentrate butter at points convenient for assembling and shipping and to give grading and inspection privileges for a small charge. Butter is now concentrated at Minneapolis, Duluth, and Chicago. In all cases where through rates apply from shipping point to market on routes passing through Minneapolis or Chicago, carloads of butter may be unloaded for inspection and then reshipped at the same through rate plus a transit charge of 3 cents per hundredweight. This charge covers the cost of switching and providing a refrigerator car when the butter is ready to be shipped. The same transit rate applies via Duluth, altho transportation by this route is a combination of rail and water. This route can be used only part of each year, but it offers attractive rates for butter produced in Northern Minnesota during the season of navigation on the Great Lakes, and large quantities of butter are sent over it. Less than carlot quantities are shipped to concentration points at local freight rates without additional charge for delay incident to inspection.

Another innovation in co-operative marketing of butter is branding and advertising. Formerly, much high-quality butter was purchased by wholesale receivers and jobbers, advertised and sold under private brands. Creameries may have received some of the advantages of such selling methods but, if so, the gains were realized only indirectly through the higher prices which competition may have forced dealers to pay. The advantages of the Land O'Lakes brand now accrue directly to co-operative creameries. Only sweet cream butter scoring 93 or higher is sold under this brand. Another distinctive feature of butter thus

⁸ J. D. Black and E. L. Guthrie. Economic aspects of creamery organization, 1925. (No longer available for distribution.)

branded is that an official inspection certificate stating that the butter scored 93 or higher when inspected is enclosed in every carton and stamped on every tub. Such certificates obviously have much advertising value, as they put the stamp of authority on the quality of the product. The certificates enclosed in the cartons have the additional feature of being easily identified by having perforated on them the number of the creamery that made the butter, the churning number, and the date of packing.

The policy of successful business firms is generally followed in making the terms of sale conform to the wishes of buyers so far as such a policy is practicable. Butter is sold in packages of different sizes, and on different price bases. The most common unit of sale is a carload of butter of the same quality, altho the needs of buyers require modification of this rule as to both quantity and grade.

Butter is packed chiefly in tubs altho, as the selling program progresses, an increasingly large percentage is packed in one-pound cartons. Not only is the association securing more outlets that demand print butter, but some of the outlets that once bought tub butter are now buying the pound package. This change in the nature of the demand seems to be due partly to the tendency of consumers to demand package food products and partly to the efforts of the sales department of the Land O' Lakes Creameries to encourage retail stores to sell butter in cartons. This policy has the two important advantages of conforming to the trend of consumer demand and retail practice and of allowing the co-operative selling system to reach the consumer more directly by controlling the package in which the product is finally sold.

A print room is maintained in which butter is packed in small packages. The pound print is most common, altho there is a growing demand for half-pound and quarter-pound prints. Other types of packages are also used to suit the convenience of buyers—tin cartons for the trade in the tropics and South America, or the "family roll" which is prepared for customers who are prejudiced in favor of dairy butter and which conforms to the shape into which farm butter is commonly molded. Only sweet cream butter scoring 93 is put in cartons bearing the Land O' Lakes brand. Butter of other scores is printed but does not have the brand of the association on it. Such cartons frequently bear the trade mark of the buyer.

Printing and packaging are therefore important activities of this new marketing system that require much space and labor. The print room, as now equipped, has a daily capacity of 125,000 pounds with one eight-hour shift of labor. Space is available in the plant to install additional equipment and to double the output of print butter. These services necessarily cause increased costs of marketing, altho the extra

price received for butter in cartons fully compensates for the added expense. Such butter generally sells at a premium of $1\frac{1}{2}$ to 2 cents per pound over tub butter.

Sales are also made on a basis to suit the customer, altho a large percentage of butter is sold on agreement calling for the delivery of a given quantity of butter of a given quality, generally weekly, throughout the year. The association plans to sell as much butter as possible

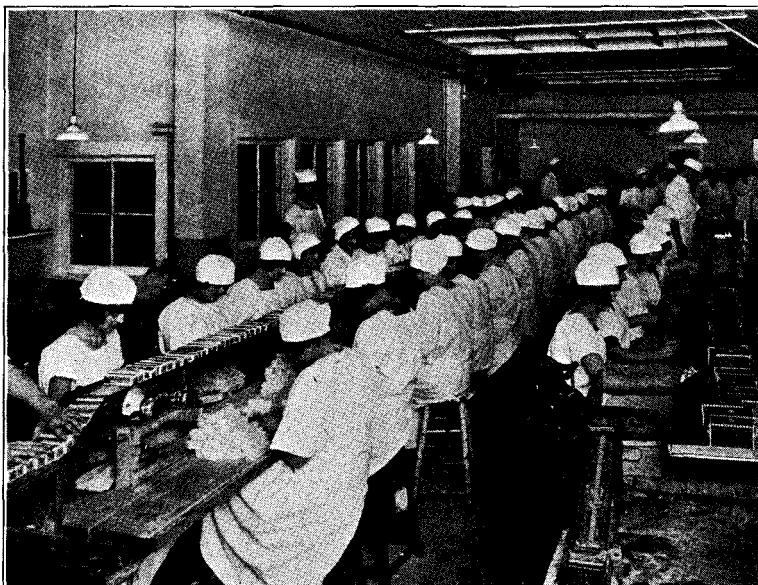


Fig. 7. Part of the Print Room, Land O'Lakes Creamery

in this way because it minimizes sales effort and because it is thought that the prices that buyers pay for assured quantities of the desired quality are higher than could be obtained by finding buyers only as the butter is received. All butter can not be sold in this way, however. The supply and the quality of butter vary. Some dealers, especially in large markets, object to buying on this basis. They prefer to buy as they buy from creameries or as they previously bought from creameries that are now members of the Land O'Lakes Creameries. Moreover, small quantities will continue to be needed to supply the unexpected needs of customers who buy regularly on agreement. Nevertheless, a large amount of supplies can be contracted for, especially in periods of small receipts, if production is accurately forecast.

The price of butter, whether or not it is sold on agreement, is generally based on New York or Chicago quotations. A Chicago quotation is used in dealing with buyers at most markets outside of New

England, New York City, and Philadelphia. Merchants at these markets prefer to use the quotations for New York City because of close proximity to that market and keen competition with dealers in it. The use of the New York quotation is gradually being extended to other markets, however, especially in selling butter of the best quality, as price quotations for New York are most satisfactory by virtue of the pre-eminence of New York City as a market for country creamery butter. Prices are generally quoted by the sales manager as a premium over or a discount under the quotations for extras, and they generally apply to the quotation on the date of arrival of butter at destination, altho occasionally sales are made f.o.b shipping point and the price applies at time of shipping.

A recent but interesting development is the co-operative advertising of butter by dealers and the association. Various arrangements are made as to the division of expense and the type of advertising, depending upon individual circumstances. Billboards, newspapers, handbills, and printed material for retail stores (as showcase cards, window stickers, and streamers) are the principal advertising media used. Owing to the experimental nature of the advertising done, no conclusions can be drawn as to its effectiveness, altho the managers are sufficiently encouraged by the experience to extend the plan gradually to other markets. An advertising fund is provided and a comprehensive analysis of butter markets is being started before definite plans are formulated for more extensive advertising of Land O'Lakes products.

Wider distribution between markets is secured. Carloads of butter were shipped direct to more than 80 important wholesale and jobbing centers in 1926 and 1927 and the tendency seems to be for the distribution to become even wider. These markets, it will be noted from Figure 8, are widely scattered over the United States, altho they are located chiefly in the eastern half of the country. New York City, which previously ranked first in receipts of Land O'Lakes creamery butter, was second to Boston in 1926, only 21 per cent of the output of the Land O'Lakes creameries being shipped to New York in that year as compared with 54 per cent for all Minnesota creameries in 1920. Thirty-six markets took over a million pounds each.

Two possible important advantages to be gained from this wider distribution of butter are: (1) saving in freight charges and (2) a higher price for butter. A comparison of the freight actually paid and the amount that would have been paid if all butter had been marketed in New York City indicates that substantial reductions in transportation costs have been realized. The average monthly saving for the twelve months from July, 1924 to June, 1925 was more than \$10,000 (See Table XI). Variations in the amount of saving depend upon the

nature of the distribution, but in only one month of this twelve-month period was the loss large. It is true that not all of the butter would have been shipped to New York City by the regular method of marketing, but a sufficiently large proportion would have gone to this market and neighboring cities that have the New York City rate to make this comparison significant.

TABLE XI
COMPARISON OF FREIGHT PAID BY LAND O'LAKES CREAMERIES AND AMOUNT THAT WOULD
HAVE BEEN PAID IF BUTTER HAD BEEN SHIPPED TO NEW YORK CITY,
JULY, 1924 TO JUNE, 1925, INCLUSIVE

Month	Gain	Loss
1924		
July	\$16,428	
August	6,042	
September	16,634	
October	12,517	
November	39,670	
December .....	.....	\$9328
1925		
January .....	.....	3958
February .....	.....	1655
March	1,762	
April	18,806	
May	7,459	
June	16,861	
Monthly average	\$10,103	



Fig. 8. Principal Markets for Land O'Lakes Butter

The effect on butter prices of the co-operative selling program is less easily demonstrated because price data are inadequate. That the Land O'Lakes Creameries is an important price factor in the butter market can not be disputed. Size, alone, gives it a bargaining power

possessed by no local creamery and realized by only a few wholesale dealers. A national sales organization has an advantage in being able to select the best markets.

It is also reasonable to assume that the standardization and the selling and advertising program have in some measure increased the demand for butter. Consumers' habits of buying butter are easily changed.⁹ Moreover, the experience of other large butter marketing concerns that market in a similar manner has been favorable. Out of 20 large dealers located in 15 of the principal American butter markets, 15 expressed themselves as believing that improvement in quality of butter when accompanied by modern sales methods increases the per capita consumption.¹⁰ Only four dealers thought that no change in consumption results from improving quality. One dealer was of the opinion that improvement in quality had prevented a decline in per capita consumption that would otherwise have taken place, because consumers prefer butter to butter substitutes if butter of good uniform quality can be had. Uniformity in quality was emphasized by many of these dealers as being a very important factor affecting the demand for butter. A majority of dealers thought that better butter is consumed more freely because it is more palatable. Several dealers believe that only the demand of consumers of the largest income groups is affected, while one national distributor believes that the increase due to better quality has been especially pronounced in the South.

It would be hazardous to estimate the effect of such influences upon prices. Undoubtedly, the price of high-scoring butter has been affected most favorably because emphasis has been placed on selling this product. Indeed, it is possible that this policy of the association has depressed the price of low-score butter, as the invasion of the association into southern and middle western markets that have been distinctly centers of consumption of medium and low-quality butter seems to indicate that high-score butter has to a considerable extent been substituted for a low-score product. Margins between the different scores in the markets to which butter is shipped, if available, would help to explain this problem, altho they would not be conclusive evidence of whether prices of a particular grade are absolutely higher or lower. They would merely show the effect of the selling program on the relative values of the butter of different score.

What logically seems to have taken place, then, is that the demand for high-grade butter has been increased and that low-grade butter has been only partly replaced by it. The level of prices for butter sold by

⁹ An unpublished study of factors determining butter prices, by T. G. Stitts, points out that the consumption of butter fluctuates widely with changes in price.

¹⁰ This number includes 6 chain stores companies and 14 jobbers and wholesalers. Dealers who handle Land O'Lakes butter and who do not are included.

the Land O'Lakes Creameries is probably higher, and the price of butter sold by other agencies has doubtless been similarly affected, altho not to the same extent. These conclusions seem warranted from the nature of the publicity and sales program, and the mild flavor, which encourages the consumption of Land O'Lakes butter.

A detailed study of sales for two months, selected at random, shows that butter was sold in markets outside of New York City at prices averaging approximately 1/3 cent higher than New York City quotations, when differences in freight charges are considered. Approximately the same gain was evident when prices actually received in New York City were compared with sales prices in other markets.¹¹ The gains appear to vary between markets, depending upon local conditions and the ability of the sales department to establish good trade relations. This is not a problem peculiar to co-operative butter marketing. Maintaining similar prices in different markets, meeting competition by price concession here or by raising prices there, are common problems of sales organizations operating in a national market. The problems of butter selling alone constitute a large study and are not within the scope of this bulletin.

Attention has also been given to developing markets in the vicinity. Member creameries have developed local sales of butter, and sales of Land O'Lakes butter have been pushed in Minneapolis and St. Paul. Creameries have been encouraged to sell high-grade butter to the local trade when low-grade butter was sold and to persuade their patrons to consume the product of their own marketing enterprize. One result of this effort, as pointed out in a previous section, is that approximately one-third of the member creameries that formerly sold chiefly low-scoring butter are now selling primarily their best product. This change has been effected since the creameries joined the association. Moreover, only 6 per cent of member creameries now sell exclusively second-grade butter locally, 8 per cent sell both second and first grades, and 86 per cent sell their highest grade exclusively. Approximately 88 per cent of the local sales reported by 207 creameries for two months in 1926 were of high-grade butter, the exact percentages being 86 in July and 90 in December. This means that the major part of this aspect of the local sales program has been realized.

Available data do not indicate how much the consumption of country creamery butter has increased or how much it may be stimulated by local sales campaigns. Sales of butter by creameries are large, however. The total local sales reported by 207 creameries were 560,900 pounds in July, 1926, and 402,000 in December of the same year. This in-

¹¹ Only prices of solid-pack butter are included in this analysis.

dicates total annual sales of about $5\frac{3}{4}$ million pounds, assuming that the sales in these months were representative of the whole year, or in the neighborhood of 12 million pounds for all member creameries. This represents about 13 per cent of the total butter production of these creameries. The percentage sold locally varies widely, depending upon the nature of local competition, the price policy, and the size of the consuming population in the local trade area. As the central organization has no control of local sales policies, its influence in stimulating local sales has been only indirect. Moreover, its effect has been only nominal because the management has considered that member creameries are in a better position to handle the local market problem than is the central organization.

The development of a market for high-scoring butter in Minneapolis and St. Paul is an interesting feature of the selling program. The Twin Cities have long been recognized in the butter trade as a market for centralizer butter. The introduction of a high-scoring butter, therefore, encountered the difficulty of displacing well established brands. Moreover, it was generally thought that butter selling at a premium over that which was consumed in the Twin Cities could not be sold in large quantities.

The experience of the Land O'Lakes Creameries during its three years of selling in the Twin Cities seems to have disproved this theory, at least in part. The amount of Land O'Lakes butter sold in 1927 was approximately twice that marketed locally in 1925, the first full year in which the association sold butter in Minneapolis and St. Paul. Advertising on billboards, through "dealers' helps," handbills, and newspapers has been carried on intensively and has supplemented the large amount of publicity that the association has received by establishing its headquarters in the Twin Cities. A part of the larger distribution is ascribed by the management to the lower margins taken by retailers. The lower retail margin, and hence the relatively lower price may have been made possible by the larger volume handled. In fact, it is probable that this is part of the explanation for the larger sales.

Twin Cities distribution is handled by the Land O'Lakes Creameries much the same as by other jobbers. Salesmen solicit orders and make deliveries. Ten salesmen, with as many trucks, are provided for this work. Distribution is through chain stores and other types of retail stores. All butter is sold for cash or on weekly credit. The credit department provides the necessary information for extending credit and making collections. Only high-scoring sweet cream butter in prints is sold in this market.

This selling program has necessitated the pooling of butter. Pooling is done by score. Settlement is made with creameries on the basis

of a 92-score butter with differentials in price for the different scores. These price differentials, which are determined each month by the board of directors, are so set as to establish a settlement price that reflects the market value of butter of each score during the selling period. This method of determining the settlement price is necessitated by the policy of selling a small amount of butter of different scores, without maintaining its pool identity. Since complete data as to receipts from sales and expenses are not available at the time of settlement (payment being made to creameries on the 15th of the month following the settlement of a monthly pool), member creameries are paid partly on the estimates of probable sales and expenses. Sufficient information is generally available, however, by the 10th of the following month, when settlement prices are determined, to make it possible for the board to establish the price without serious overpayment or underpayment of creameries contributing to any pool.

SIDELINE ENTERPRISES

Creamery Supplies and Equipment

A supply department of the Land O'Lakes Creameries was organized in January, 1923, to sell a complete line of supplies and equipment. The volume of business of this department has grown at a surprising rate. The net sales, as given in Table XII, have increased from \$440,000 in 1923 to \$1,671,000 in 1926, and \$1,520,000 in 1927. Profits, also, have increased from \$37,000 to \$128,000 in the same period.

TABLE XII
SUMMARY OF SUPPLY BUSINESS OF LAND O'LAKES CREAMERIES, INC., 1923 TO 1927

Year	Net sales	Profits
	(ooo omitted)	(ooo omitted)
1923.....	\$ 440	\$ 37
1924.....	1104	100
1925.....	1438	135
1926.....	1671	148
1927.....	1520	128

The savings of the supply department have also been important, particularly in the development stage of the Land O'Lakes Creameries, in building up the morale of the organization. It is sometimes difficult for officers and patrons of co-operative creameries to realize that they are being benefited by the association's efforts to improve quality, standardize and sell the product, and similar services, but they can readily appreciate the work of the association when they get the benefits in the form of a large patronage dividend. The supply department has been able to give the members an actual cash refund and this has

been a significant factor in holding the members to the co-operative marketing system and insuring its success.

The supply business has also supplemented the efforts to improve the quality of butter by offering supplies sometimes better suited to creamery management methods recommended by the central organization, and by stimulating, through contests and advertising, the purchase by farmers and creameries of supplies that are desirable if not necessary to improve the quality of butter. A good illustration is the large number of farm coolers sold in 1925 and 1926 as a result of prizes offered to creameries having the largest sales.

Supplies and equipment are sold at prevailing jobbing prices and savings are distributed among members on the basis of patronage. Another possible policy would be to sell at the lowest possible prices. This policy would have the advantage of giving members the savings from their purchases immediately, but it also has the important disadvantage of frequently incurring the ill will of manufacturers and wholesale distributors who are selling to competing jobbers. The sale of supplies and equipment at prevailing prices has been adopted partly for this reason, and also because it provides adequate margins with which to pay operating expenses and stimulates sales by holding out the prospects of patronage refunds.

The method used by the supply department of pro-rating patronage dividends is a departure from the generally accepted method, as well as an improvement. The common practice in pro-rating patronage dividends is to distribute the earnings in proportion to the gross business. That is, if two patrons each buy \$1000 worth of goods and the rate of the total net earnings is 7 per cent, each of these buyers receives a \$70 patronage dividend—7 per cent of the gross purchase. The supply department has changed this method so that the patronage dividend is based on the gross margin actually realized on the goods sold. A credit is made on the account of each patron for the actual gross profit on the goods bought, and at the end of the year these credits are totaled and each patron receives the dividend on the basis of the amount of profit on the kinds of goods purchased by him. This seems to give a more equitable distribution of the surplus, patrons sharing more nearly in proportion to what they have actually contributed to the fund.

Supply department patronage dividends are paid in money or its equivalent in preferred stock as provided in the by-laws of the association. The by-laws provide that until all the preferred stock of the association is issued and paid for, the directors may order that not to exceed 25 per cent of the net earnings payable to patrons from any department shall be paid in preferred stock of the association, at par,

and the rest in money. This method has been resorted to only once, in 1924. Since then payments have been in cash.

Supplies and equipment are sold to both member and non-member creameries and to creameries in other states, altho chiefly to members and in Minnesota. Only 20 per cent of sales were outside Minnesota in 1925 and these were chiefly in Wisconsin. Non-members receive the same patronage dividends as members, which chiefly accounts for the large amount of non-member business.

Sweet Cream

Sweet cream is shipped both frozen for ice cream manufacturers and unfrozen for table use in eastern and southern markets. Small quantities are purchased by eastern cheese manufacturers.

Sale of sweet cream by the Land O'Lakes Creameries is another illustration of the ability of a large co-operative to take advantage of changes in the dairy industry. By being able to sell a cream of guaranteed quality and butterfat content in large and dependable volume, such an organization can develop large and distant markets located in regions where cream is produced at relatively high cost. An important advantage of such sales is the stabilization of the butter market in times of surplus butter production. Sales of sweet cream have increased substantially since they were first made, in March, 1925. They were 38 per cent larger in 1926 than for the corresponding period in 1925, and similar increases were realized in 1927. Sale of sweet cream is now the second sideline enterprise in importance. In 1926 it included 228 carloads of unfrozen cream and 89 carloads of frozen cream, a total of 317 carloads, having a sale value of approximately 2½ million dollars.

Powdered Milk and Powdered Buttermilk

The manufacture of powdered milk and buttermilk has only recently been undertaken by member creameries of the Land O'Lakes Creameries. Two types of powdered buttermilk are sold. One, manufactured by a roller process, is used chiefly as stock food. The other, made by the spray process, is used chiefly in the manufacture of ice cream, candy, soft drinks, bread and pancake flour. This is the principal type produced because of its superior quality, altho the output of the powder made by the roller process continues to be relatively large because of its lower cost of manufacture and because it can be made in individual creameries. The large investment in a plant using the spray process makes the overhead expense prohibitive for individual creameries. This means that manufacture by this process must be by co-operative arrangement among creameries, which necessarily results in slow development in spite of the superior quality of the output.

Not only is the large investment a deterrent to such co-operative activity, but it is unusual to find a group of creameries having a sufficient volume of buttermilk of similar quality to support such an enterprise and within economical hauling distance of a central plant. Eighteen creameries producing sweet buttermilk are members of the association that operates the one plant using the spray process. Trucks equipped with thermos tanks and owned by the powder manufacturing association assemble the buttermilk at the plant. Only powdered buttermilk is made at this plant.

All powdered products are sold by the Land O'Lakes Creameries under the association brand by agreement between the central organization and individual creameries or the manufacturing association.

Cheese

The marketing of cheese, altho undertaken primarily to provide cheese for patrons of member creameries, is now becoming an important business in the central markets. A new-process cheese, specially blended for the Land O'Lakes Creameries, is handled. It is sold in one-half pound cartons and in two- and five-pound loaves in four styles—American, Brick, Swiss, and Pimento. Sales have grown among buyers of Land O'Lakes butter without sales effort, so the management maintains, and in May, 1927, they amounted to approximately 120,000 pounds monthly.

Cottage Cheese

Cottage cheese provides a market for the skimmilk of a few creameries that receive whole milk and helps to complete the line of dairy products handled.

Milk Fat

Milk fat is the last article to be put on the list of dairy products handled by the selling association. It consists of pure fat obtained from butter by a special process. As only the fat of butter is used, this product provides a good market for butter that has good flavor but that scores low because of poor workmanship. Manufacturers of candy and ice cream are the principal buyers of milk fat, as they are also the principal customers for frozen cream and powdered buttermilk.

Re-conditioning Tubs

Butter tubs are cleaned, sterilized, and sanded. This enterprise becomes increasingly important as the amount of butter that is printed grows. The reclaiming of the tubs in which butter is received and sale of them to member creameries is not only an additional source of income for the central organization but also a source of low-priced tubs for creameries.

Churning

A churning department is maintained to provide an outlet for cream that a member creamery may wish to sell, or to re-work butter that does not meet the legal requirement of 80 per cent fat. This cream is paid for on the basis of its butterfat content and quality. A charge is made against a creamery for re-working its butter and the creamery must assume any loss in weight that may result from re-making.

Eggs

Eggs have been marketed since butter was first sold, but they have been handled on a relatively small scale and chiefly as an accommodation to butter customers in Minneapolis and St. Paul, until the latter part of 1927, when this part of the business was expanded. As a part of a new plan then adopted, eggs are being purchased from member creameries and other local co-operative associations marketing eggs, assembled at the Minneapolis plant, candled, sorted, and graded, and sold under the Land O'Lakes brand.

FINANCIAL ORGANIZATION

The amount of capital required to finance a butter marketing organization with an annual business valued at nearly 40 million dollars is necessarily large. Inventories, outstanding accounts with creameries and dealers, cash on hand to meet current expenses, machinery and equipment, and buildings, to mention only the principal capital requirements, together with other assets of lesser importance, were valued at $2\frac{3}{4}$ million dollars in 1928.¹²

Of this amount, nearly 40 per cent was provided by member creameries through the purchase of capital stock, the profits left in the business, and the deductions from the proceeds from the sale of butter that are made specifically to create working capital and are in addition to deductions made to meet operating expenses.

The amount of capital stock issued is relatively small. On January 1, 1928, it was less than \$50,000, nearly half of which was preferred stock issued to patrons of the supply department in lieu of cash for patronage dividends in 1924. The rest was common stock sold to member creameries, which are required to purchase, as a minimum, one \$25 share for each 50,000 pounds of butter manufactured in the year previous to joining the association.

Profits left in the business are a much more important source of capital than capital stock. They amounted to approximately \$475,000 in 1928, of which 40 per cent was surplus and 60 per cent undistributed

¹² According to the annual report of the association on December 31, 1927, it was \$2,776,499.09.

income. This method of financing has been made possible partly by the slow development of the organization but chiefly by the fact that the bills of lading which are offered as security are recognized as high-class security for loans. It also has the advantage of raising capital more easily than the sale of capital stock. This method would not have been possible if the business had not been profitable. Sideline enterprises, particularly the machinery and supply department but also, to a lesser extent, the Twin Cities sales, cheese, churn room, cream, and milk powder departments, have generally yielded a profit. No part of the receipts from butter sales has been appropriated for the surplus fund; income from this source is wholly distributed to butter after operating costs of the butter sales department have been covered.

Deductions from the returns for butter sales are the principal source of stockholders' capital contributions. The marketing agreement provides that the association may deduct from the sale of butter not to exceed $\frac{1}{2}$ cent per pound of butter. Association notes, called certificates of indebtedness, maturing in two years and bearing 6 per cent interest, are given to member creameries for these deductions. This is not only a more convenient method of raising capital than the sale of capital stock and a quicker method of getting it than by the accumulation of surplus, but also has the advantages of distributing the responsibility for furnishing capital among members on the basis of volume of business and providing a revolving fund that can be adjusted to changing capital requirements more easily than surplus or capital stock. At the same time, Twin City bankers, from whom the association obtains most of its loans, consider this part of the stockholders' equity in the business as satisfactory, from a lending standpoint, as capital stock and surplus. Such deductions have thus far been made as seem warranted by the financial needs of the association and by the condition of the loan market. At no time have they exceeded the $\frac{1}{2}$ cent per pound provided for in the marketing agreement, and generally they have been considerably less than this amount. On the average, about $\frac{1}{3}$ cent per pound of butter has been deducted. On January 1, 1928, the fund thus accumulated amounted to about $\frac{1}{2}$ million dollars, or about 19 per cent of the capital of the association.

Borrowed funds are also an important part of the working capital. Part of this capital is obtained on open accounts by purchases of machinery, supplies, and packing materials, altho it is secured chiefly through drafts drawn on butter and cream buyers. These drafts are drawn when butter and cream are shipped and are deposited at banks for immediate credit. They represent short-time loans, as an average of only 11 days is needed to get returns from dealers. Substantial loans are obtained also from Twin City banks to finance current capital requirements

that can not be met by funds from other sources. These are likewise short-time obligations, as the funds are obtained, primarily, to market butter. Longer commitments are necessary during the butter storage season, but the amount of butter stored by the association is relatively so small and the storage period so short that it does not materially increase the average turn-over of borrowed capital.

The practice among member creameries of demanding advances against butter shipped substantially increases the requirements for operating capital by the association. Originally, creameries waited for returns from butter shipments of a monthly pool until the settlement of the pool on the 15th day of the following month. This arrangement seemed to work such a hardship on creameries buying butterfat for cash and for others that were short of operating capital, and on banks with which creameries had accounts, that a plan was adopted to permit a member creamery to draw drafts not to exceed 80 per cent of the sale value of butter at the time of shipment to the association. About two-thirds of the creameries avail themselves of this opportunity to obtain returns from shipments sooner than would otherwise be possible. In order to distribute the additional cost of financing thus incurred, interest at the rate of 5 per cent is paid on proceeds from butter sales to any creamery that does not ask for advances, and interest is paid on such portion of the balances as the creamery could withdraw in the form of advances. At the same time, creameries are encouraged to provide a larger part of the operating capital of the association by receiving a higher rate of interest on unused balances than can generally be obtained at country banks.

The financing of the fixed assets of this association, as of most other marketing organizations, is comparatively easy because of the relatively small investment in this part of the business. Capital is needed primarily to finance the commodity. A modern warehouse adequate for present needs and in which is also located the headquarters, is provided by Minneapolis business interests on favorable terms on a rental-purchase basis. Offices maintained in other cities are rented. Machinery and equipment, office furniture and fixtures include the other principal items of this part of the investment. They, too, have small value in relation to the size of the business, and are exceeded by capital stock and surplus by a comfortable margin.

OTHER SERVICES

Many other services can be given to co-operative creameries by a central sales organization, as was pointed out in the opening section of this bulletin. Less attention will be given to them than to the services already discussed, however, chiefly because less emphasis has been placed

upon them by the Land O'Lakes Creameries but also partly because the effect of such services upon the dairy industry is difficult to measure. For example, much information is sent to member creameries that will assist them with creamery practices and that is in addition to the assistance offered especially in the production of Land O'Lakes butter. Buttermakers are informed of changes in the manufacture of butter, particularly as regards the quality of butter, which only a central organization can detect in the early stages by virtue of its statistical organization. At the same time advice is given as to the best method of manufacture under the new conditions. Advice is also given in the selection of managers and buttermakers when advice is sought. Some assistance is given in accounts and audits, altho no special attention has been given to developing this service. Unnecessary duplication of co-operating creamery organization seems to have been avoided as a result of the influence of the central organization, in a few cases, altho less influence has been exercised in this regard than is possible, so the management maintains, because of the fear of incurring the ill will of competing community factions.

The standardization of weights of butter packed in tubs should also be mentioned. Tub butter is generally bought on the open market on the basis of the number of full pounds, no payment being made for fractional weights. The field service and inspection departments have done much to reduce losses thus incurred. A report is sent to each buttermaker showing the shortage or overweight of the tubs in each churning and the importance of correct weights is further impressed upon buttermakers by including proper weights as an important factor in workmanship contests. The trade practice of requiring tubs of butter to contain $\frac{1}{4}$ of a pound more than the marked weight of the tubs is followed. A tolerance of an additional $\frac{1}{2}$ pound is allowed without prejudice to a buttermaker, in the workmanship contests.

A small line of refrigerator cars, arranged for with private companies and used exclusively for shipping butter, provides transportation equipment that is free from odors injurious to the quality of butter. At the same time it makes possible better arrangements with the railroads for assembling butter at concentration points. Collection of claims against public carriers for overcharges and occasionally against dealers who are slow in settling accounts is a part of the service. Obviously, this service is rendered only to creameries marketing under the shipping service arrangement. The association also represents the dairy industry where the interests of the industry as a whole are involved.

Previous discussion indicates that the most immediate problems of a central co-operative butter sales organization are the improvement of quality of product and the establishment of a sales organization. Other

services mentioned have developed slowly on this account, altho more attention is given them as the quality improvement and sales programs progress. These developments are calling for a closer analysis of the business, a necessary correlative to any business, whether co-operative or proprietary, when trade expands and services multiply. The management is already beginning to appreciate that research, in addition to the present statistical service of the general office, would be a valuable asset to the organization by permitting the development of such new service as assisting co-operative creameries with business practices and problems of internal efficiency. At the same time such a department could contribute to present service departments by studying such manufacturing methods as affect the keeping quality of sweet cream butter and powdered buttermilk, or by analyzing such economic aspects of the business as trends in the price of butter and factors affecting prices.