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Cooperative Creameries In South Dakota

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Agricultural Economics Department
AGRICULTURAL EXPERIMENT STATION
South Dakota State College
Brookings, S. D.

Contents

Cooperative Creameries in South Dakota

W. P. COTTON, GABRIEL LUNDY AND L. M. BROWN[1]

IN 1939 THE SOUTH DAKOTA Agricultural Experiment Station began a study of the organization, management and financial operations of cooperative creameries in the state in an attempt to discover methods and standards of performance that would better enable creameries to increase the efficiency of their operations and thereby yield greater net returns to their patrons.

Records were obtained from 33 of the cooperative creameries in the state in regard to their organization, membership, patronage, trade territory, method of financing, buying and sales policies and financial statements. In regard to the last, operating statements and balance sheets were obtained covering the business for each of the two years, 1938 and 1941. An analysis of these records afforded the basis for the material presented in the following pages.

Characteristics of State's Dairy Industry

Dairying and Creamery Butter Production an Important Industry in South Dakota. For the five years, 1936 through 1940, the gross farm income from dairy products (cash sales plus value of dairy products consumed on the farm) in South Dakota averaged over 19 million dollars, or 16.5 percent of the total gross farm income, excluding government payments. Excluding government farm payments, the cash income from dairy products averaged over 15 million dollars, or 15.06 percent of all farm cash income for this five-year period.[2]

From 1937 to 1941, South Dakota's average annual creamery butter production was 40,289,000 pounds. This gave the state a rank of 14th among the 48 in volume of creamery butter produced.[3] The creamery butter production of the state in 1940 was 43,737,000 pounds, and in 1941, 46,665,230 pounds. However, this does not give the true picture of the state as a producer of butterfat, for an estimated 30 percent of all butterfat sold is marketed through creameries outside the state.

1. This study was begun in 1939 by Assistant Economist L. M. Brown with the securing of questionnaires for the 1938 operations. Brown was called to military service in March, 1941, and the work has been carried to completion by his successor, W. P. Cotton, assistant economist, with Gabriel Lundy, Station economist, cooperating.

The authors wish to express their appreciation to the creamery managers for their hearty cooperation.

2. South Dakota Agricultural Statistics—South Dakota Cooperative Crop and Livestock Reporting Service, 1940.

3. Division of Agricultural Statistics, U. S. D. A.

Dairy Production Chiefly in East and Southeast Sections of the State. Dairy production in South Dakota is concentrated in the eastern fourth of the state with an extension westward toward the southern border (See Fig. 1). With the exception of Gregory and Tripp Counties there is very little dairy production west of the Missouri River until a slight concentration is found around Rapid City and in and about Lawrence County.

Cream Represents over 90 Percent of All Dairy Products Sold From Farms. In 1940 the farm disposition of all milk produced in South Dakota was estimated to be as follows: Milk skimmed or separated for sale of butterfat, 75 percent; used as whole milk or cream on farms, 9 percent; for making butter on farms, 6 percent; whole milk fed to calves, 3 percent; retailed by producer, 3 percent; milk sold at wholesale, 4 percent.[4] In other words, 18 percent was used on farms where produced, 7 percent was sold as fluid milk, and 75 percent was sold as cream. This means that cream represented about 91 percent of all dairy products sold. Since nearly all of this cream went into creamery butter manufacture the relative importance of creameries in the South Dakota dairy industry becomes apparent.

The extremely high percentage of dairy products sold as butterfat for churning tends to lower the average price as compared to other states which sell a larger proportion of the milk produced as fluid milk.

Steady Increase in Creamery Butter Manufactured Since 1937. A study of trends in dairy products manufactured in factories in the state from 1929 to 1941 indicates a general decline in butter production from 1933 to 1937. But since 1937 there has been an almost steady increase, with the 1941 figure being the highest for the 13 year period, 1929-1941 (See Fig. 2). The more

4. South Dakota Agricultural Statistics—South Dakota Cooperative Crop and Livestock Reporting Service, 1940.

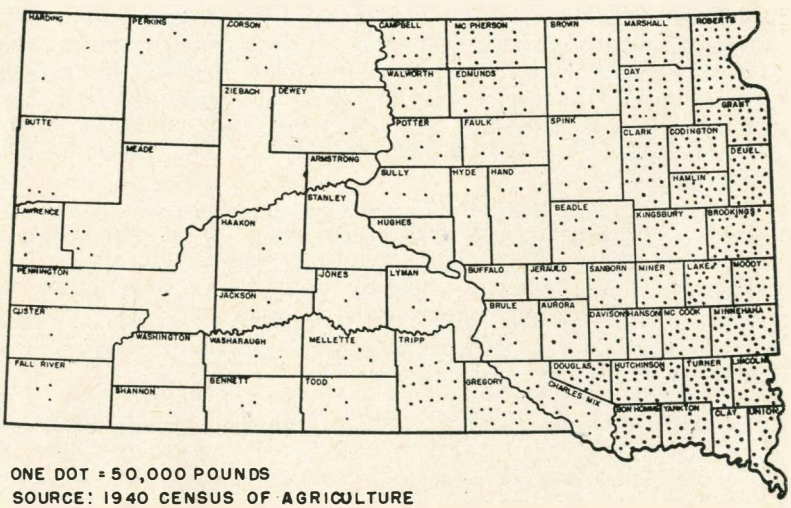


Fig. 1. Pounds of Butterfat Sold by Farmers by Counties in South Dakota, 1939.

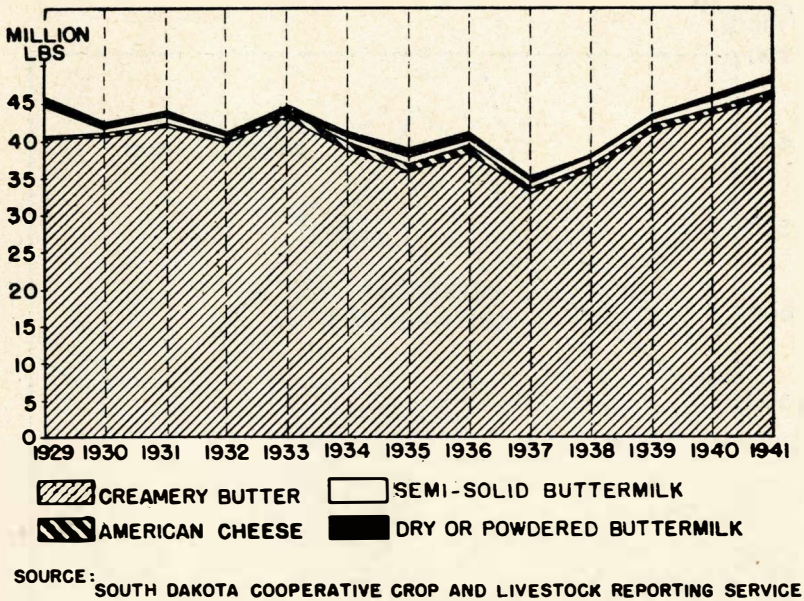


Fig. 2. Dairy Products Manufactured in Factories in South Dakota, 1929-1941.

recent developments in the production of butter, semi-solid and dried buttermilk and American cheese are of interest in light of war programs. If the production of these products in the last four months of 1941 are compared with production for the same period of 1940 the following percentage increases for the 1941 period over the 1940 period are: Creamery butter, 4.66 percent; dried or powdered buttermilk, 13.28 percent; semisolid buttermilk, 53.09 percent; and American Cheese, 55.58 percent. However, these percentage increases, except for butter, are very high relative to absolute pounds involved, for the total production of processed buttermilk and American cheese in South Dakota is quite small. (See Fig. 2).

Seasonal Production Affects Price and Economy of Plant Operation. The price of butter and the most economical use of plant, equipment and labor are all affected by the seasonal distribution of the butterfat supply. Figure 3 shows that May and June are the peak months of butterfat supply, averaging about twice as much as the low months of October, November, December and January. This indicates that both farmers and creameries might benefit by a breeding program whereby more cows freshen in the fall.

Forty Percent of South Dakota's Creamery Butter is Manufactured Cooperatively. In 1940 there were 114 creameries operating in South Dakota. Of these 38.6 percent were cooperatives, 53.5 percent were independents, and 7.9 percent were centralizers. Of the total butter manufactured in that year the cooperatives made 39.5 percent; the centralizers, 30.7 percent; and the

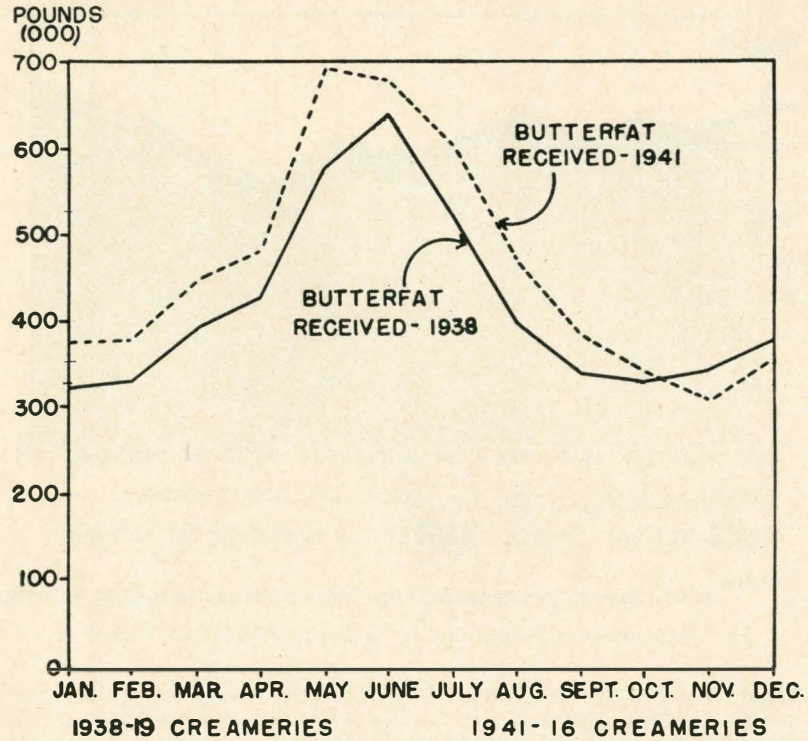


Fig. 3. Pounds of Butterfat Received at Creameries by Months, 1938 and 1941.

independents, 29.8. The average number of pounds of butter manufactured per creamery was: centralizers, 1,473,793; cooperatives, 386,994; and independents, 210,568.[5]

More than Half of Creameries in the State Produce Less than 250,000 Pounds of Butter Per Year. Figure 4 shows the number of creameries by type in specified size groups. The striking thing here is that one third of the independent creameries produced less than 100,000 pounds of butter each in 1940, while none of the centralizers and only one of the cooperatives fell in this group. However, 64 creameries, or 56 percent of the total produced less than 250,000 pounds of butter. Four of the nine centralizers produced more than 1,000,000 pounds in the year, with the three largest manufacturing an average of about 3 million pounds each.

The location of all creameries in the state in 1941 is shown by type in Fig. 5. These locations, of course, correspond with the concentration of butterfat production shown in Fig. 1. However, there is a tendency for a higher percentage of the centralizers to be located in the areas of the less concentrated production than the cooperatives.

5. Data were made available by the South Dakota Cooperative Crop and Livestock Reporting Service.

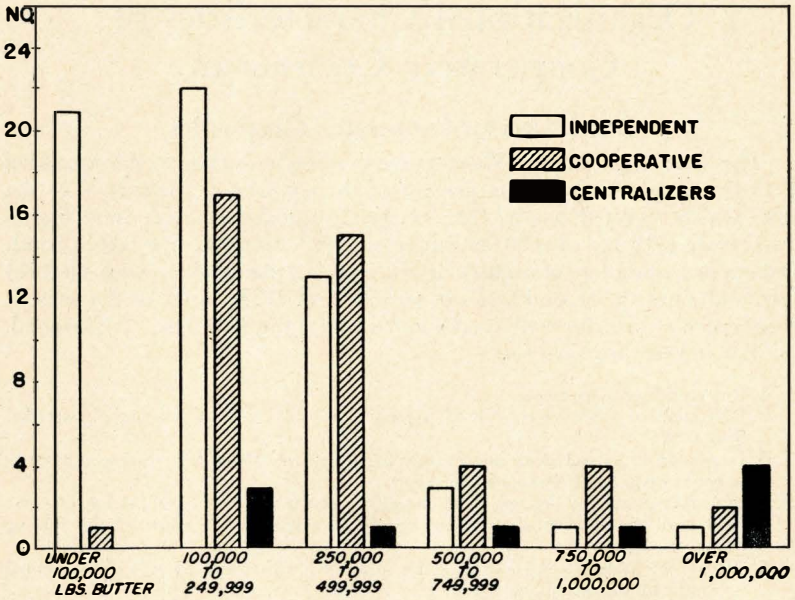


Fig. 4. Number of Creameries by Size and Type in South Dakota, 1940.

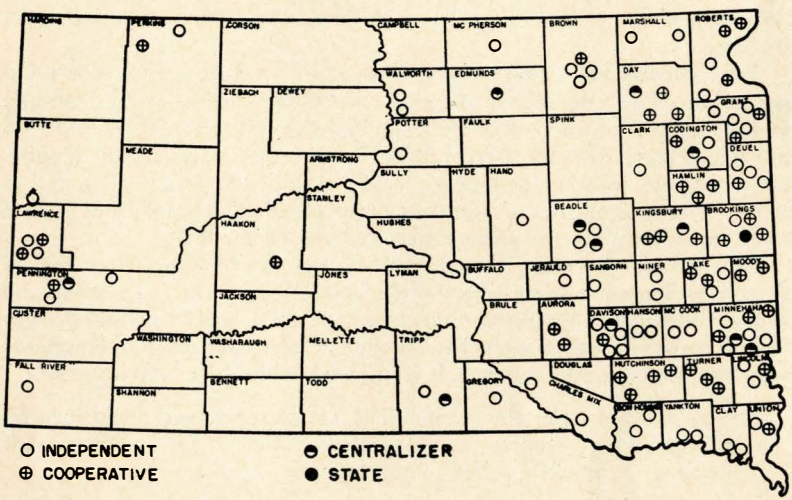


Fig. 5. Distribution of Creameries in South Dakota, 1941.

Organizational Characteristics of Cooperative Creameries

Legal Basis for Cooperative Creameries

The State Legal Basis for Cooperative Creameries is Largely the Amended 1913 Cooperative Law. Forty percent of the cooperative creameries in the state which reported on the date of their original formation were organized before 1910 and over 50 percent before 1923. Since the first law in South Dakota providing for cooperative associations is generally known as the 1913 law, and since the second was not passed until 1923,[6] most of the present cooperative creameries were incorporated under the 1913 law. As amended, this law in brief provided for:

1. One stockholder, one vote.
2. Limitation of stock ownership to $1,000, or to 1 percent if the capital exceeded $100,000.
3. Limitation of capital stock interest rate to 10 percent. (Now the maximum contract interest rate in South Dakota is 8 percent).
4. The setting aside of not less than 10 percent of the annual net profits for a reserve fund until the amount accumulated equals not less than 50 percent of the paid-up capital stock..
5. The setting aside of not more than five and not less than one percent of the annual net profit for an educational fund.
6. The distribution of the balance of the annual net gain among patrons in proportion to their patronage.

The primary differences between the 1913 and 1923 laws are that the 1923 law was designed primarily for agricultural producers, while the 1913 law as amended provides for any type of cooperative association. In most cases cooperatives organized under either law can readily reorganize under the other.

Four Federal Laws Have Direct Bearing on Cooperative Creamery Organizations. The federal laws affecting cooperative creameries most directly are the Capper-Volstead Act of 1922, the Farm Credit Acts of 1933 and 1935 and the Federal Revenue Act of 1936. Briefly, these laws set up requirements whereby associations may be legally classified as cooperatives and as such be exempt from undue anti-trust prosecution, eligible for loans from a Bank for cooperatives and exempt from federal income taxes.

The Internal Revenue Bureau, with respect to exemption from federal income taxes, appears more critical of deviations from farmer ownership and control and seems more insistent on compliance with strictly non-profit agricultural cooperative principles than the Banks for Cooperatives. Compliance with the following requirements, it is believed, will satisfy both agencies.

1. Voting rights must be substantially (at least 90 percent) owned by farmers who patronize the association. Voting rights based on stock ownership must be limited to one vote per member.
2. Business with non-members must not exceed that done with members.

6. Chapter 11.11 and Chapter 4.16, South Dakota Code of 1939, Vol. 1.

3. In all financial or business transactions strict equality in treatment must be maintained between members and between members and non-members, for example, as to patronage refunds.
4. Financial reserves must have a necessary purpose and must be reasonable in amount.
5. Patronage records must be kept permanently.
6. Dividends on capital stock must be limited to eight percent annually, or the state legal interest rate, whichever is greater.
7. Supply purchases made for patrons who are neither members nor producers must not exceed 15 percent of the total supply purchases.
8. Purchases from nonproducers (dealers) of commodities to be marketed must be limited entirely to emergency or justifiable needs.
9. Cooperatives must not try to evade the law by operating through a non-exempt profitmaking corporation which they control.
10. The association must not only be operated in accordance with the foregoing requirements but its organization papers must not contain provisions inconsistent therewith.[7]

Compliance With Cooperative Regulations

Considerable Variation in Compliance. For 1938, 70 percent of all creameries reporting stated that they did more business with members than with non-members, and for 1941, 76 percent made a similar report. From this it is apparent that about one-fourth of the cooperative creameries in the state fail to meet legal cooperative requirements set out above in regard to patronage, simply by failing to make adequate provision for making members of patrons.

In 1939 cooperative creameries were asked to report on the trend in the proportion of stock held by producers. Fifty-two percent reported the proportion to be increasing, 36 percent reported a decrease and 12 percent reported no change.

A summary of voting privileges and customs of cooperative creamery members is shown in Table 1.

Table 1. Analysis of Voting Customs of Members of 27 Cooperative Creameries in South Dakota—1939

	One Vote Per Member	Vote By Proxy	Vote By Mail	Amendment of By-Laws 2/3 Vote of Stockholders	Majority Vote of Stockholders
Percentage of creameries replying affirmatively.	100.0	28.6	86.6	83.3	16.7

The 1939 survey showed that 12.5, 62.5 and 25 percent of the cooperative creameries used 6, 8 and 10 percent, respectively, as the upper limit for dividends on stock. For the five year period, 1934-1938, from 75 to 86 percent of all creameries reporting paid dividends on capital stock each year (See Table 2).

7. Adapted from material received from the Omaha Bank for Cooperatives.

The method of distribution of net gain by 24 creameries in 1938 is also shown by Table 2. From this it is seen that all creameries provided for patronage dividends if a balance remained of net gain after provision had been made for reserves, dividends on stock and educational funds. However, 86 percent of these creameries paid patronage dividends to non-members eligible to become members in the form of credits toward the purchase of stock rather than in cash. Many creameries use this as an effective means of maintaining active membership and increasing their capital, although in 1941 some cooperative creameries paid as much as $36,000 in cash patronage dividends or refunds.

In 1941, 26 percent of the creameries reporting paid both state and federal income taxes. Apparently the principal causes for noncompliance with federal tax exemption requirements were: (1) Relatively too much business with non-members and too little with members, (2) too much stock in the hands of non-producers and (3) too large an allowance for dividends on stock.

Adoption of Revolving Fund as a Source of Capital May Be Desirable. Many cooperative creameries may wish to consider a financing and organization plan that should help to eliminate the foregoing three reasons for noncompliance with federal income tax exemption requirements. This plan is generally known as the revolving capital or revolving fund plan. Its provisions can be used either with a stock or a non-stock membership arrangement. Some recent reorganizations of cooperatives have been on the non-stock membership plan.

Table 2. Method of Distribution of Net Income Used by Cooperative Creameries in S. D., 1938 (Percent to each item).

	Reserve				Dividends on Stock			Educ. Fund		Patronage Dividend Balance
	10%	25%	Set by Board	Other	6%	8%	10%	1% Min.	1-5%	
No. of creameries	13	3	2	6	3	15	6	3	14	24
Percent of creameries	54.2	12.5	8.3	25.0	12.5	62.5	25.0	17.6	82.4	100.0

In these reorganizations the revolving fund system and non-stock membership have been introduced about as follows: Those former, often absentee, stockholders who were no longer either farmers or patrons were issued non-voting certificates of equity equal in value to their stock certificates and commonly drawing 4 percent interest. The stock certificates were surrendered in exchange. Local patron stockholders were given certificates of membership, commonly drawing no interest, although a low rate of interest might be provided for if the members so decide. These membership certificates are of two kinds: Class A voting membership for farmers who are customers, and Class B non-voting membership for non-farmer patrons. Otherwise, the rights and privileges of the two classes of membership are alike.

Some people hold that a prospect should sign an application and pay down a small cash fee in order to initiate his membership in the cooperative.

This would show that the applicant was interested. Under the revolving fund plan the applicant could then earn his full membership in one of two ways: (1) A patronage refund or patronage dividend could be allowed to accumulate on the books of the association until he has earned a full membership certificate, or (2) the association could deduct and retain as payments on a membership certificate one or two cents a pound on the applicant's butterfat deliveries. Either one of these two methods should attract new members and increase patronage. Observance of point three of the requirements listed on page 9 does not call for payment of cash patronage refunds to non-members until they have paid the membership fee.

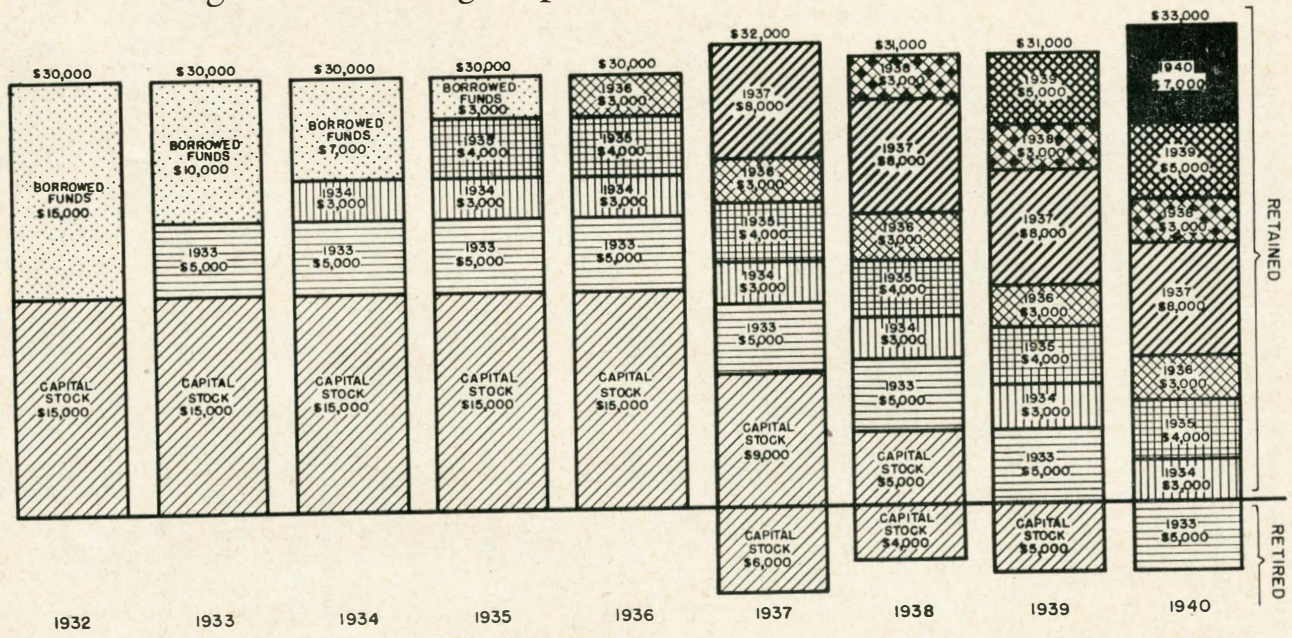
If a cooperative creamery either has borrowed capital or non-patron, possibly absentee, stockholders it may wish to pay these off by means of retains[8] under the revolving fund or revolving capital plan. Fig. 6 illustrates the principle of operation of this method of financing. Assuming that in 1932 the association had a capital of $30,000 divided equally between paid in stock capital and borrowed funds, it might wish to pay off the loan first. The next year the coöperative, it is assumed, retained $5,000 of income which otherwise should have been paid to the patrons. This retain was built up by means of a uniform deduction from the price paid per pound of butterfat delivered by each patron. In return each patron was credited on the books of the cooperative with the sum he thus contributed to the capital. In addition, it is assumed that at the end of the year he did receive or at least could have received a "Revolving Fund Certificate" of the amount thus contributed. Revolving fund certificates may or may not draw interest, depending on the majority vote of the members; a high interest rate would be undesirable. These certificates should have no fixed maturity date; both the time of payment or redemption and the interest rate to be paid could well be left to the discretion of the board of directors.

After applying the $5,000 on the loan, the creamery cooperative ended the 1933 year with a debt of $10,000. The 1934 retains of $3,000 brought the debt down to $7,000. This debt was paid off entirely by means of the 1935 and 1936 retains of $4,000 and $3,000, respectively. All the patrons received credits on the books of the association and received revolving fund certificates for their respective interests in each year's revolving fund or capital, as previously explained.

At the beginning of 1937 the cooperative was out of debt, but stockholders, some of whom were interested only in dividends, still owned the $15,000 of capital stock. That year, according to Fig. 6, the sums retained amounted to $8,000, of which $6,000 was applied on the repurchase of the outstanding stock at the rate of 40 percent paid to each stockholder, thus treating them all alike. Retains totaling $3,000 in 1938 and $5,000 in 1939 enabled the cooperative to pay off respectively $4,000 and $5,000, or 26.7 percent and 33.3 percent to each stockholder.

8. Retains, or a retain, is used as a noun to describe deductions from the proceeds of products handled, and which are treated as debts of the association and charged to an account payable to the patron from whose proceeds they were deducted. New retains are used to retire the oldest outstanding debts including retains and hence form a revolving fund, or capital, based on the product handled for each patron rather than having a form of capital derived from cash through stock sales or other means.

Fig. 6. Revolving Capital of a Farmers' Cooperative.



Adapted from chart supplied by the Omaha Bank for Cooperatives.

Thus, at the end of 1939 this creamery was out of debt and all its capital had been contributed by its patrons strictly in proportion to the volume of their patronage. With retains amounting to $7,000 in 1940 the creamery association was in position really to make the capital revolve. The oldest retains, or revolving capital certificates, representing the $5,000 deductions from payments to patrons in 1933, was therefore paid off.

With some variation in the total capital of the association from year to year and with annual retains it is usually possible each year to pay off or retire the oldest retains. This method of financing has the merit of placing the ownership and financial control of the cooperative in the hands of its active patrons. With either no interest, or at most a low rate of interest, paid on such contributed capital, and with all earnings above the amount retained being prorated back to the patrons in proportion to their patronage, no one can make a profit on some other customer's business with the cooperative.

As indicated earlier, some reorganized cooperatives have exchanged certificates of equity for the stock of non-patrons. In such cases the certificates of equity have been paid off and retired by means of the revolving fund plan, as already explained with respect to capital stock. With respect to certificates of membership for active patrons, specific provision has been made for their retirement in the event that the member should cease being a patron. These various provisions thus establish the organization on a truly cooperative and democratic foundation, with capital contributions in proportion to the use each member makes of the association. Assuming ample volume and sound management this should enable the farmer cooperative to satisfy the previously cited 10 point requirement for eligibility to borrow from a bank for cooperatives and to be exempt from federal income taxes. Such exemption, however, must be obtained by arrangement with an internal revenue office.

Control and Management

Who Controls and Manages the Creamery? Twenty-six creameries reported a range of 5 to 7 members on their boards of directors. The average term of office for which directors were elected was 2.5 years, with a range of 1 to 3 years. However, there were instances in which individual directors had served a total of 22 years. The average compensation per board member per meeting was $2.08, with a range of $1 to $3.

Fourteen creameries required the manager be bonded, four the treasurer and bookkeeper and two the secretary. In all cases except one the association paid the bonding costs.

The average age of creamery managers reporting in 1939 was 41.5 years, with a range of 27 to 62. These had served an average of 7.1 years as manager and 7.5 years as buttermaker. Of 24 reporting on education, 21 had finished grade school; 10, high school; 4, college; and 12, creamery short courses. Eighteen of these 24 were paid straight salaries with a range of $75 to $220, averaging about $150 per month, while six received a salary plus a commission.

Of 27 cooperative creameries reporting on auditing practices for 1938, 19 reported audits by auditing firms, and 8 by creamery officers. Twenty-two reported annual audits and 5 monthly ones. Twenty-two also reported preparation of monthly balance sheets while 23 reported monthly income and expense statements.

Perhaps a method of uniform accounting for all cooperative creameries in the state would be one of the greatest boons to both creamery patrons and creamery managers. Today, because of variation in methods of depreciation, allocation of costs and methods of reporting the year's financial operations, it is practically impossible to analyze the annual statements of a group of cooperative creameries on a comparable basis.

Financing Cooperative Creameries

Average Present Value Approximately $31,000. The balance sheets of 23 cooperative creameries in December, 1941 showed that the average total present value per creamery was $31,070 (See Table 3). The average total investment for fixed assets before allowing for depreciation was: Land and buildings, $7,279; plant and office equipment, $12,820; truck and delivery equipment, $1,732; or a total, $21,831. Against this original investment in fixed assets, was set up an average reserve of $8618, thus bringing the present value of fixed assets down to an average of $13,213. This represented 42.5 percent of total assets.

Average current assets, or operating capital, per creamery amounted to $14,602, or 47 percent of the total. Cash assets alone averaged $7,990, or 25.7 percent of all assets. This unusually large amount was due to several creameries having a large cash balance of, as yet, undistributed net gain.

Inventory, other assets, and accounts receivable represented 16.2, 10.4 and 5.1 percent of all assets, respectively. A range in values for each form of

Table 3. Asset Values of 23 Cooperative Creameries in S. D., December, 1941

	Average Amount	Percent of Total Amount	Range in Amounts
Current Assets:			
Cash	$ 7,990[1]	25.72	$ 243 to $46,411
Accounts Receivable	1,583	5.10	99 to 9,379
Total Inventory	5,029	16.18	141 to 16,759
Total Current Assets	$14,602	47.00	141 to 63,620
Fixed Assets:			
Land and Buildings	$ 7,279		400 to 21,718
Plant and Office Equipment	12,820		3,673 to 32,982
Truck and Del. Equip.	1,732		0 to 7,082
Total	$21,830		5,059 to 52,603
Reserve on Fixed Assets	8,617		0 to 29,883
Total Fixed Aeests	$13,213	.42.53	$4,522 to $26,281
Other Assets	**3,255**	**10.47**	
Total All Assets	**$31,070**	**100.00**	**$6,513 to $89,774**

1. This figure is about twice as high as for the majority of creameries due to several plants having a large undistributed cash balance.

Table 4. Liability and Net Worth Values of 23 Cooperative Creameries in S. D., December, 1941

	Average Amount	Percent of Total Amount	Range in Amounts
Current Liabilities	$ 6,564	21.13	$ 0 to $44,069
Deferred Liabilities	371	1.20	0 to 7,075
Total Liabilities	6,935	22.32	0 to 44,069
Net Worth			
Capital Stock	9,568	30.79	1,590 to 30,129
Surplus and Reserve	14,514	46.71	0 to 45,455
Total Net Worth	24,135	77.68	5,960 to 50,904
Total Liabilities and Net Worth	$31070	100.0	$6,513 to $89,774

asset is shown in Table 3. This shows the extreme variations in total assets for individual creameries to be from $6,513 to $89,774, and for fixed assets, from $4,522 to $26,281.

Capital Furnished Largely by Members and Patrons. Approximately $7,000, or 22 percent, of the total capital of these 23 creameries was in the form of current and deferred credit and an average of about $24,000, or 78 percent, was furnished by members and patrons in the form of capital stock, surplus, and reserves (See Table 4). Capital stock alone represented about 31 percent of all capital, averaging $9,568 per creamery, but with a range from $1,590 to $30,129. Sixteen of the 23 creameries had over $5,000 of capital stock outstanding.

The capital provided by surplus and reserves averaged $14,514 per creamery. With one exception every creamery showed a surplus, and therefore could be considered in reasonably good financial condition, even though the amount ranged from very little to $45,455.

Wide Variation in Interest Rates Paid for Commercial Credit. Of seven creameries stating that they were making use of commercial loans, four were securing bank credit; one, credit from a private individual; and two, obtained credit from a bank for cooperatives. Interest paid on the bank loans ranged from 4 to 8 percent; on the private loan, 5.4 percent; and interest rates charged by the Bank for Cooperatives were reported as 3.5 and 4.0 percent. However, borrowers from the Bank for Cooperatives are required to purchase stock in the Bank at the rate of either $100 per $2,000 or $100 per $10,000 or fraction thereof borrowed, depending on the kind of loan. This stock can be resold to the Bank when the loan is paid.

Financial Ratios as Measurement of Efficient Management. The current condition of a business is commonly measured by the ratio of current assets to current liabilities.[9] It is highly desirable that current assets be at least equal to current liabilities, and in most cases a ratio of 2 to 1 is preferable. Of 22 creameries studied in 1941, 15 had a current ratio of better than 2 to 1, while two had a current ratio of less than 1 to 1. In periods of good prices creameries should build up their cash reserves to tide them over in less favorable periods.

9. Current assets, in addition to cash on hand or in bank, as indicated in Table 3, are made up of resources such as readily collectible accounts receivable and quickly salable products, such as butter, which can easily be converted into cash. Current liabilities are obligations, accounts payable or debts which have to be paid soon.

Table 5. Financial Ratios of Cooperative Creameries by Groups Arranged According to 1941 Butterfat Receipts

Group	No. of Creameries	Average Lbs. Butterfat Bought 1941	Ratio of Current Assets to Current Liabilities 1941	Ratio of Net Worth to Fixed Assets 1941	Ratio of Net Worth to Capital Stock 1938	Ratio of Net Worth to Capital Stock 1941
I	3	132,607	1.38	1.11	1.12	1.18
II	8	224,749	2.52	1.38	1.91	1.98
III	5	380,845	2.76	1.99	2.28	2.81
IV	6	759,321	3.70	1.90	2.75	3.31

When these creameries were grouped by volume of butterfat handled it was found that there was a steady improvement in the current ratio as the average volume of butterfat increased (See Table 5, columns 3 and 4). Three creameries averaging only 132,607 pounds of butterfat had a current ratio of 1.38, while six creameries with an average of 759,321 pounds of butterfat had a current ratio of 3.70.

Net worth is composed of capital stock plus surplus and reserves. The relative size of net worth and the value of fixed assets assists in determining the extent to which the owners are financing the fixed investment. If net worth equals the value of fixed assets, it may be assumed the owners are financing the entire fixed investment. The higher this ratio becomes the easier it should be for the cooperative to borrow money with the fixed assets as a lien. A comparison of this ratio for creameries by the preceding group sizes shows that as the volume increases the more favorable this ratio becomes. An examination of Table 5, column 5, shows that all groups had a ratio of better than one to one, but that the ratio of the two groups with the larger volumes was almost 2 to 1.

It is highly desirable that creameries maintain a reasonable surplus to safeguard their financial condition. The ratio of net worth to capital stock will show the relative size of this surplus as compared to capital stock, and will also show the book value of each share of stock. A comparison of this ratio in one year with that of another will indicate the trend in the business, (i.e. whether it is improving, declining, or holding its own).

Such a ratio of net worth to capital stock is shown in Table 5 by group size of creameries for 1938 and 1941. An examination of this table shows that as the average size of the creameries increased the amount of surplus relative to capital stock also increased materially, and of course the book value of the stock increased. The comparison of the 1938 and 1941 ratios indicates that there was an improvement in the financial condition for all groups in 1941 over 1938, but particularly in case of the larger volume groups. This improvement may be due partially to increased volume for most plants, but in the main it must be attributed to the improvement in butter prices in 1941 over 1938, which afforded a greater operating margin from the receipts from the overrun (pounds of butter secured in excess of the butterfat churned).

Volume and Methods of Assembly

Factors Affecting Volume. Since volume is a prime factor in determining the operating efficiency of a creamery, it is of interest to look at some of the factors influencing volume. A particular creamery's total receipts of butterfat is determined both by the amount of butterfat produced within its trade territory and the share that it secures of this total amount. This share is, of course, affected by the number of competitors within the area and their competitive practices, including methods of assembly, butterfat buying policies, services rendered, location of trading center, and prices paid for butterfat. Among cooperative creameries the establishment and maintenance of membership and a cooperative spirit among producers is very important.

A review of some practices of five of the largest cooperative creameries is of interest with respect to volume secured. The largest, with butterfat receipts of over one million pounds in 1941, had 12 truck routes and a trade territory extending 25 miles from the plant. Its manager stated that there was little overlapping of creamery routes in his territory, and that his only serious competitor was one centralizer. About 98 percent of this creamery's butterfat was secured by routes. Perhaps most significant was the method of payment for butterfat. This creamery used deferred payments on a monthly pool basis. The price depended on the amount left after each month's expenses were deducted from the month's receipts. This resulted in a price that was sufficiently high to attract the large volume. This method of payment is perhaps particularly effective in an area where most cooperatives buy for cash and declare patronage dividends but once or twice a year.

A second creamery, with a volume of over 800,000 pounds of butterfat in 1941, operated no truck routes whatever. One hundred percent of its cream was delivered at the door by patrons. The principal competition came from four stations buying for centralizers.

This creamery was located in the county seat and had an apparently very affable and capable manager who had been with the creamery since 1911. Its building, equipment and sanitary conditions are among the best in the state and the organization also enjoys an enviable trucking rate on butter to Chicago.

A third creamery, with a volume of about 750,000 pounds of butterfat in 1941, operated 12 truck routes and extended its trade territory out 35 miles. About 96 percent of its cream was secured on routes. The manager stated that there was little duplication of routes in its territory, and that the creamery's only serious competitor was a centralizer. Perhaps the most significant characteristic of this creamery is, that of its 700 patrons, 100 percent are either members or in the process of becoming members. A retain for stock credit is made from each patron until he has purchased a $10 share of stock, thus entitling him to membership.

Creamery No. 4 handled 714,698 pounds of butterfat in 1941. It is located in a county seat town in an area of fairly heavy cream production. The creamery owns 3 trucks and operates them six days a week. Each of these trucks serves approximately 190 patrons and travels approximately 29,000 miles per

The series of pictures on this and the facing page show the various steps in the procuring, grading, testing, pasteurizing and churning of cream and finally the packaging of the finished product, butter, for retail sale.

year, handling a little more than 200,000 pounds of butterfat. Eighty-five percent of all butterfat handled is picked up on routes. The most distant route patron is 34 miles from the plant. The total number of patrons is 625 and all are members.

This creamery faces competition from local independent and local centralizer stations and routes. Its territory is adjacent to that of other cooperative creameries, but very little overlapping of cooperative truck routes is reported. During the year it sold to five different markets ranging from Seattle, Wash., to New York City. At the end of the year the creamery declared a $28,421 cash patronage dividend, averaging 5 cents per pound for butterfat in sweet cream, and 4 cents per pound for butterfat in sour cream bought, or $45.50 per patron. This is perhaps one of the most efficiently managed creameries in the state. Its volume of butter manufactured has shown an almost constant increase from 312,031 pounds in 1933 to 889,563 pounds in 1941.

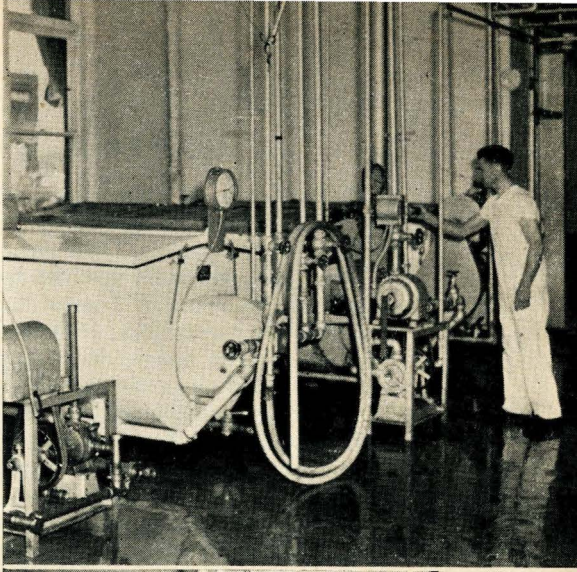
Creamery No. 5 bought 634,713 pounds of butterfat in 1941. Eighty percent of this came from 10 truck routes. More than 95 percent of the total volume is obtained from members. This high percentage of membership is maintained by applying patronage dividends toward a $10 share of stock, the ownership of which constitutes membership.

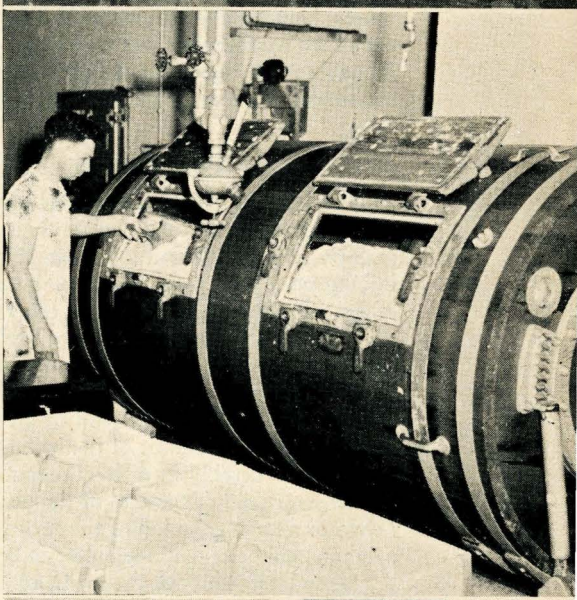
One of the interesting features of

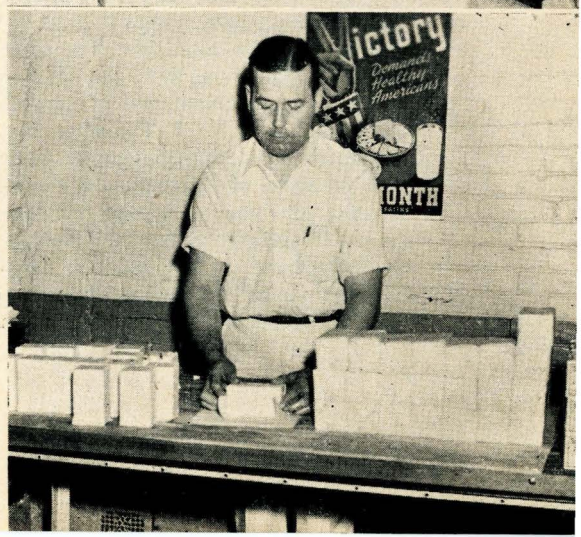
this creamery association is that it owns and operates a locker plant of some 425 lockers from which it makes meat deliveries to patrons by cream trucks without charge. This service, plus unusually attractive locker rental rates, has undoubtedly been a factor in maintaining and increasing volume of butterfat receipts. The locker plant was started in the fall of 1938. During that year the creamery manufactured 587,561 pounds of butter. By the end of 1941 its volume of butter manufactured had increased steadily until for that year it was 796,561 pounds.

For 1941 this creamery showed a net profit of $25,516 on creamery operations; $4,334 net profit from handling produce and miscellaneous items; and a net return of $1,018 from its locker operations.

About Two-Thirds of Cream Picked Up on Truck Routes. Cooperative creameries reporting for 1941 on methods of butterfat assembly showed that an average of 63 percent of their butterfat was obtained by truck routes, 32 percent was delivered at the door by patrons and 5 percent was obtained through cream buying stations. Five of 18 creameries reporting stated that they operated no truck routes, three operated 12 routes and 10 operated from one to three routes. Forty percent of the creameries reporting had their routes served by their own trucks; 52 percent operated their routes by hired trucks; and 8 percent used both types of transportation. Sixty-two percent of the creameries stated that their most distant route patrons lived from 25 to 35 miles from the plant and the remaining 38 percent stated that their most distant route patrons lived from 12 to 23 miles from the







plant. Practically all routes were run twice a week, with a few being run three times a week in summer. Only 17 percent of the creameries made a hauling charge to patrons. These averaged about 1 cent per pound of butterfat.

Great Variation in Competition by Area. Of the creameries reporting on competition encountered 12 stated that they were competing with from one to three other cooperatives; 16 with from one to three centralizers; 6 with from one to three independent creameries; 12 with both cooperatives and centralizers; and two stated that they were competing with cooperatives, independents and centralizers, (See Fig. 7).

In some sections there was apparently very little duplication of routes by cooperatives while in others the overlaping was rather extensive. The prevalence of route duplication is indicated to some extent by the fact that 43 percent of the cooperatives stated that they were competing with others for business. Explanation for this competition may be partly in the control of routes. Seventy-five percent of the creameries stated that they had full control of the routes while 25 percent had only partial control. For those creameries having full control of the routes the manager determined the territory in 82 percent of the cases and the board of directors in 18 percent.

Butterfat Buying Policies

Ten Percent of Creameries Pay on Pool Basis. Three out of 30 creameries reporting stated that they made their settlements on a pool basis. One paid cash twice a month and the other 26 paid cash on delivery. Two creameries buying on a pool basis made complete settlement two weeks after the close of the monthly pool period. The other paid approximately 90 percent cash on delivery and the remainder two weeks after the close of the pool period. Pool prices were arrived at after deducting all expenses, including management, depreciation, taxes and insurance from the month's receipts.

In most cases the price paid by creameries buying on a cash basis was the competitive market price of the immediate area. However, this price appears to vary considerably in different sections of the state. Therefore, the amount of dividend paid at the end of the year per pound of butterfat bought is not nearly as good a criterion of the successful operation of the creamery as is the average total price paid for butterfat, including the patronage dividend.

Little Uniformity in Cream Grading. There seems to be considerable need for a more uniform system of grading cream and pricing according to grade. Most creameries stated that they made a 2 cent differential between first and second grade cream. But 3 out of 25 creamery managers said they did not receive any No. 2 cream, and 18 out of 22 of those that did receive No. 2 cream churned it with No. 1. The other four plants either churned the lower grade separately or sold it through other outlets. It is unfortunate that price differentials for butter of different scores are not continually sufficiently great to justify a strict adherence to a price differential for different grades of cream that would be sufficiently great to place the reward for good cream where it is due —in the hands of its producer. Yet, the cooperative associations should be able to do much, through more careful cream grading, toward bringing South Dakota butter into greater favor on the larger markets.

Factors Affecting Net Returns Available on Butterfat Handled

The Final Measurement of a Creamery for Efficiency and as a Market for Butterfat is the Net Returns Available for Each Pound of Butterfat Handled. This measurement takes into account all costs and income and reduces the difference between the two to the sum left available for payment of each pound of butterfat bought.

In addition to method and cost of financing which has been discussed, factors which have considerable influence on net returns available are: Volume and investment, cost of procurement, manufacturing expense, general and administrative expense, percent overrun, marketing operations, including market outlets, quality of product and price received, transportation and packaging costs, by-product sales and sideline enterprises. A brief discussion of the influence of these factors follows.

Volume and Investment

Volume and Investment are Prime Factors. The relationship between volume and fixed costs per unit of product is rather well understood. That is, in the case of creameries, the more pounds of butter that are manufactured in a given plant, the less per pound will be such fixed costs as management, rent, interest, taxes, and depreciation. However, when several plants are compared as to the effect that volume has on costs the relative total fixed costs of the different plants must be considered, for the investment and management costs of two creameries with the same volume may differ by a wide margin. As an illustration, the comparative ratios of different plants between volume of butter manufactured and investment in fixed assets are presented in Table 6. This shows that the individual plants had a range from 13.66 to 78.67 pounds of butter manufactured for each $1.00 of fixed assest. If 37 pounds as

Table 6. Pounds of Butter Manufactured Per Dollar of Fixed Assets in 22 South Dakota Cooperative Creameries, 1941.

Plant No.	Lbs. Per Dollars Invested	Plant No.	Lbs. Per Dollers Invested
1	13.66	12	37.34
2	20.48	13	39.76
3	21.41	14	43.32
4	26.00	15	44.46
5	28.79	16	44.69
6	32.66	17	47.32
7	34.12	18	47.83
8	35.79	19	56.00
9	35.79	20	57.82
10	35.84	21	67.97
11	36.70	22	78.67

a median value is selected, one-half, or 11, of the creameries fall on each side of this ratio. Of these 22 creameries, 12 produced more than, and 10 less than, 350,000 pounds of butter in 1941. Of the 12 creameries with a volume of more

than 350,000 pounds, 33 percent manufactured less than 37 pounds of butter per dollar of fixed assets. While of the 10 creameries manufacturing less than 350,000 pounds of butter, 30 percent manufactured more than 37 pounds per dollar of fixed assets.

With this limitation of the effect of volume in mind an examination of the relationships between volume, average total plant costs per pound of butter manufactured, price received per pound of butter and net returns available per pound of butterfat bought was made (See Table 7). For this comparison 24 creameries were divided into the following four groups according to the volume of butterfat received:

Group	Pounds of Butterfat Received	Group	Pounds of Butterfat Received
1	under 150,000	3	300,000 to 499,999
2	150,000 to 299,999	4	500,000 and over

Table 7 shows that there was a continual decline in total average plant costs per pound as the volume increased from Group 1 to Group 4, with the average costs in Group 4 being just about one-half those in Group 1. Also, the average price received for butter increased from 31.2 cents for Group 1 to 32.5 cents for Group 4 and 33.1 cents for Group 3 .With the lower costs and higher prices for the groups with higher volumes it would be expected that these groups would also have higher net returns available per pound of butterfat received. Table 7 shows this to be true, with Group 4 averaging almost 5 cents a pound more than Group 1.

The fact that returns available for Group 3 were lower than for Group 2 might be explained by the fact that neither marketing nor procurement costs were considered in Table 7.

Table 7. Plant Costs and Price Received Per Pound of Butter and Net Returns Available Per Pound of Fat by Groups of Creameries Arranged by Volume—1941.

Group No.	No. Plants	Ave. Lbs. B.F. Bought	Plant Costs Per Lb. Butter	Price Rec'd Per Lb. Butter	Net Returns Available Per Lb. Fat Bought
1	4	129,648	3.99	31.2	33.54
2	9	227,973	2.99	32.2	36.48
3	5	380,845	2.94	33.1	36.04
4	6	759,321	2.04	32.5	38.19

Costs of Procurement

What are the Costs of Handling and Transporting Cream Enroute to Plant? There are many factors that affect costs of butterfat procurement. First of these is method of assembly, whether by truck route, delivered by patron or through cream station. The cheapest method to the creamery, presumably, is by the patron, particularly where no premium is paid for door delivery. However, this method may not be the cheapest for the patron and probably involves the greatest total transportation mileage.

Since very little butterfat is procured by South Dakota cooperative creameries through cream stations an analysis of procurement costs was confined to

cream routes. These costs to the individual creamery vary according to the type of route. If cream is procured by hired truckers on a commission basis the rate of commission is of primary concern to the creamery. If the creamery owns and operates its own route trucks other factors must be taken into account as salary of the driver; operating costs of the truck, including interest, taxes and depreciation; utilization of the driver's time when not on the truck; concentration of butterfat production; and volume and percent of the total production on a given route secured by the particular creamery.

Records kept by creameries on costs of butterfat procurement are inadequate in many instances. Particularly is this true of creameries operating their own routes, for in many of these cases it is questionable whether complete charges have been made for depreciation and interest. However, from the information available from 24 creameries, Table 8 was constructed. This shows the average amount of butterfat hauled per truck and the average procurement cost per pound by type of route. From this it appears that trucks owned and operated by creameries are the most efficient and that hired trucks are the most costly means of truck transportation. It cost 12 creameries $36,664 to procure approximately 2 million pounds of butterfat by 20 hired trucks, while 8 creameries procured about 4.5 million pounds by 20 of their own trucks for $36,704. This means that the transportation cost per pound of butterfat for hired trucks was 1.75 cents, and for owned trucks it was only .82 cents per pound. This difference was largely due to the fact that most hired truckers were paid 2 cents per pound commission for hauling. In view of the lower costs with owned trucks this commission rate appeared to be excessive, unless the hired trucks operated under considerably more unfavorable conditions such as operating in areas of greater competition or less concentrated butterfat production.

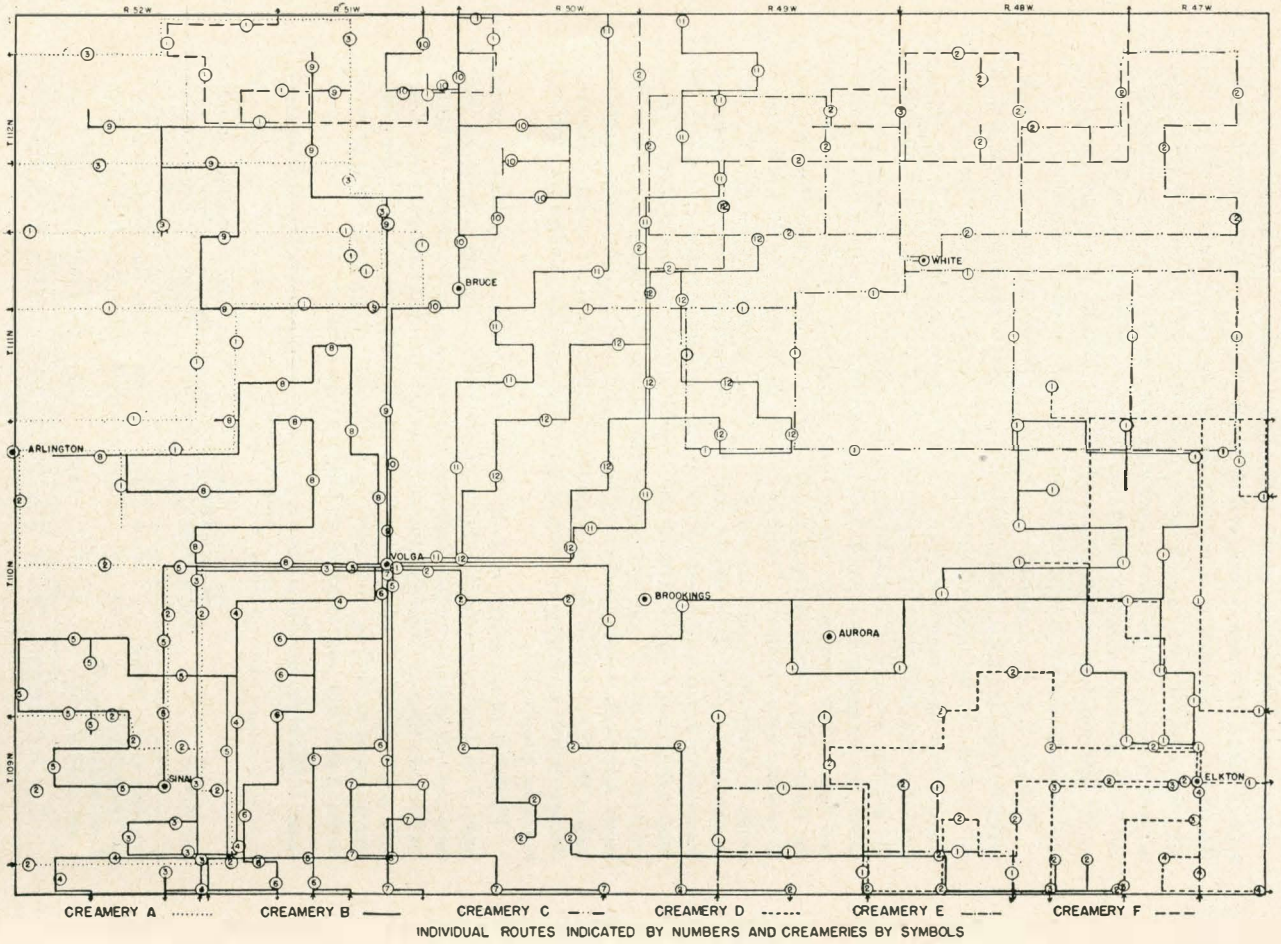
Butterfat procurement costs by trucks for individual creameries varied from .7 to 2 cents per pound. Some creameries hiring trucks lowered their total costs by graduating the commission downward as the volume of butterfat hauled increased. This practice suggests that many creameries could lower their costs of procurement and pay more equitable prices by graduating their commissions according to volume hauled and also charging the patrons in outlying and high cost areas for picking up their cream.

Table 8. Cost of Procurement of Butterfat on Routes—24 Cooperative Creameries in South Dakota, 1941.

Type of Route	No. Crys.	Total of Trucks Operated	Total Procurement Cost Reported	Total Cost Per Truck	Total Butterfat Hauled (lbs.)	Butterfat Hauled Per Truck (lbs.)	Total Cost Per Lb. B.F. Hauled (cts.)
Creamery Owned Truck	8	20	$ 36,704	$ 1,835	4,500,476	225,023	$ .82
All Trucks Hired	12	20	36,664	1,833	2,093,865	104,693	1.75
Combination of Owned and Hired Trucks	4	11	17,865	1,624	2,178,458	198,042	.82
Total and Average	24	51	$ 91,233	$ 1,789	8,722,799	172,016	$ 1.04

1. Majority were paying 2 cents commission per pound of butterfat hauled.

Fig. 7. Creamery Routes in Brookings County, July, 1942.



With the objectives of putting butterfat procurement on an economical basis and of conserving rubber, more cooperative creamery managers and patrons might well consider adopting a plan whereby truck routes in communities might be so laid out that one truck haul all cream on its route. In certain communities of eastern South Dakota this plan has been in effect for some time. In others there is still a great deal of duplication of routes.

An example of creamery route arrangements in a sample area is shown by Fig. 7. This map presents the arrangement of all creamery routes operating in Brookings County.

Six creameries are operating 12 trucks which run 25 routes in the county.[10] Of these routes 60 percent are from 25 to 50 miles long and another 32 percent are from 51 to 75 miles in length. The estimated percentages of total butterfat production on individual routes picked up by a single creamery truck were: On 6 routes under 50 percent; on 9 routes from 50 to 75 percent; and on 10 routes from 76 to 90 percent (See Table 9).

The length of all routes in the county is 975 miles and most of these are run twice weekly. Of this 975 miles, about 21 percent, or 206 miles, represents duplicated travel by trucks of different creameries. This amounts to approximately 21,400 miles per year in Brookings County only. Although this duplication isn't as extensive as in some areas, some part of one or more of the routes of every creamery operating in the county is duplicated by the routes of one or two other creameries. It is reasonable to expect that most of this duplication of services could be eliminated by an exchange of territory, or otherwise, if the several interested creamery associations would get together on the problem. This should be particularly effective on sections of duplicated routes where one creamery is securing a low percentage of the total production.

Table 9.—Creamery Routes in Brookings County, July, 1942. (Length of routes and managers' estimated percentages of total butterfat production on each picked up by specified creamery's truck.)

Creamery	Route No.	Length of Route in Brookings Co.	% of Total Prod. on Route Picked up by this Creamery's Truck	Creamery	Route No.	Length of Route in Brookings Co.	% of Total Prod. on Route Picked up by this Creamery's Truck
A	1	48	80	B	10	48	60
	2	39	80		11	52	75
	3	28	85		12	46	75
B	1	87	40	C	1	59	80
	2	56	35		2	55	75
	3	35	90		3	7	15
	4	33	90	D	1	39	60
	5	48	90		2	34	60
	6	30	90		3	12	25
	7	29	90		4	10	25
	8	36	70	E	1	26	75
	9	52	60	F	1	22	85
					2	44	40

10. Since this map was prepared Creamery B has removed one of its 4 trucks from service, and thereby reduced its routes from 12 to 9, although the number of patrons has not been affected.

Manufacturing and Administrative Expense

Total Manufacturing and Administrative Costs in 26 Creameries in 1941 per Pound of Butter Made Ranged from 1.7 Cents to 4.5 Cents. The effect that volume and investment have on the manufacturing cost per pound has already been discussed (page 21). Table 10 shows the relative importance of particular types of costs. General and administrative expense, exclusive of manager's salary, accounted for from 5 to 23 percent of total expense. Building and equipment expense accounted for another 10 to 40 percent. These two groups together may be regarded as fixed costs and together accounted for from 19 to 55 percent of the total expense of the seven creameries whose records are shown.

Table 10. Distribution of Plant Costs in Seven South Dakota Cooperative Creameries—1938 (General and Administrative, Management and Labor, Building and Equipment, Supplies and Other, as Percent of Total Expense).

Plant No.	Gen. Adm. Exp.[1] Amt.	% of Tot.	Bldg. & Equip. Exp.[2] Amt.	% of Tot.	Mg'ment & Labor[3] Amt.	% of Tot.	Supplies & Other[4] Amt.	% of Tot.	Total Costs[5] Except B.F.
1	$1,583	8.76	$3,644	20.16	$5,485	30.35	$7,357	40.73	18,069
2	2,151	14.01	6,367	41.47	4,292	27.95	2,542	16.57	15,352
3	998	10.96	1,748	19.19	2,577	28.29	3,784	41.56	9,107
4	2,209	22.8	949	9.79	2,088	21.56	4,439	45.85	9,685
5	899	10.93	1,320	16.04	2,231	27.12	3,785	45.91	8,225
6[6]	682	4.9	1,924	13.82	4,723	39.92	6,592	51.77	13,921
7[6]	1,397	12.53	3,286	29.47	3,787	33.97	2,678	24.03	11,148
Ave.	1,417	11.59	2,748	22.50	3,597	29.45	4,454	36.46	12,216

1. Includes directors' fees, office salaries, office supplies, telephone, auditing, advertising.
2. Includes taxes, insurance, repairs and depreciation.
3. All management and labor salaries except office salaries.
4. Includes creamery supplies, power, light, fuel and water and miscellaneous variable costs.
5. Butterfat purchases and procurement are not included in these figures.
6. 1941 figures.

Management and labor comprised from 22 to 40 percent of total costs, and with supplies, and other variable costs, represented around 65 to 70 percent of total costs in most plants. Ordinarily, management may be considered as a fixed cost, but in most instances records submitted did not separate management from labor expense, and therefore management is not included with other fixed costs shown.

Percent Overrun

Percent Overrun Important in Determining Patron's Price. It is generally recognized that the overrun obtained, or pounds of butter in excess of pounds of fat churned, is a definite profit determining factor in creamery operation. Butterfat prices in relation to butter prices are based on an expectancy of an overrun around 25 percent, since butter is prescribed by law to contain a minimum of 80 percent butterfat. Yet reports on overrun obtained in 1941 from 22 creameries showed a variation from 22.8 to 25.5 percent. This means that a creamery having an overrun of 22.8 percent as compared to a reported average of 24.6 lost 1800 pounds of butter for each 100,000 pounds of fat

Table 11. Price Making Basis for Local Butter Sales—24 Cooperative Creameries in South Dakota, 1938

	Margin over B.F. Price										
	Local Stores				Local Retail Customers				Patrons		
	1c	2c	3c	4c or more	1c	2c	3c	4c or more	Same as B.F. Price	1c above B.F. Price	Other
No of Creameries	5	7	11	1	0	7	11	6	20	3	1

churned. With butter at an average price of 35 cents this loss amounted to $630 per 100,000 pounds of fat churned, or lowered the returns to the patron by about ⅔ of a cent per pound.

Of course, it is possible to secure a high overrun percentage by reading butterfat tests too low or giving short weights. But these methods are not to be countenanced by cooperative creameries.

Marketing Operations

A summary of records dealing with market outlets for butter sold by cooperative creameries in 1941 shows that 83.3 percent was shipped, 10.1 percent was sold to local markets, and 6.6 percent was sold to creamery patrons. The average price received for butter shipped was 32.45 cents per pound, for butter sold locally, 34.26 cents, and for butter sold to patrons, 34.23 cents. Twenty-one out of 28 creameries supplied over 75 percent of the butter for local consumption, but only eight creameries sold over 20 percent of their production locally.

Records from 16 creameries show that the following percentages of shipped butter going to specified markets in 1941: Chicago, 34.56; New York, 24.48; cooperative sales agency in Minnesota, 17.52; Marshall, Minnesota, 12.57; Seattle, Washington, 6.13; Sioux Falls, S. D., 3.05; Sioux City, Iowa, 1.33; other markets, .36 percent. Eleven out of the 16 creameries sold all or part of their shipments through a wholesale cooperative. Several of the creameries found it profitable to shift from one terminal market to another, depending on the season of the year. New York seemed to be popular during the flush season of May and June, and Chicago in the winter.

Table 11 shows the basis used in arriving at prices for local sales by 24 cooperative creameries in 1938. From this it appears that the most common practice was to charge 3 cents above the butterfat price for butter sold to local stores and to local retail customers, while 20 of the 24 creameries sold butter to patrons at the same price that they paid for butterfat.

Room for Improvement in Quality of Product. It is very probable that many creameries could increase their price on butter shipped if they could raise the quality of their product. This, of course would necessitate greater care and a stricter grading of cream,[11] the separation of grades for churning in many cases, and improved techniques in pasteurization, churning, and handling during the marketing process.

11. For reference see T. M. Olson and C. C. Totman, S. D. Agr. Exp. Sta. Circ. 22, *Production of Quality Milk and Cream*, 1935.

Packaging and Transportation Costs Are Important Items. Considerable savings are effected in a number of creameries by pooling less than car lot shipments with other creameries, in watching carefully the relative rates of various carriers, and in giving consideration to cheaper containers, as reconditioned tubs and fiber boxes. Some creameries have found it profitable to switch outlets when certain markets made door pickups and furnished the containers.

By-Product Sales

Buttermilk Constitutes the Principal Source of By-Product Sales for Most Cooperative Creameries. In 1941 the average value of buttermilk sold by 22 cooperative creameries was $550, with a range from $84 to $1,270. The average value of buttermilk sales for the 22 creameries amounted to 2.2 percent of the average total gross margin on which they operated.

In 1938 eight out of 17 creameries stated that they sold their buttermilk on yearly bids. Three were selling for ½ cent a gallon; two for 10 cents per hundred weight, two for 30 cents per barrel and two at auction.

Sideline Enterprises

For 1941, 16 out of 28 creameries reported an income from sideline businesses. Most of these 16 plants handled poultry or eggs, or both, and four of them operated freezer locker plants. Many of them handled cheese and dairy supplies as a sideline. One creamery reported its gross egg sales amounted to $16,635, and another reported its gross margin on poultry and eggs as $3,415.

For 22 plants for which figures are available for 1941, the gross margins from poultry and eggs amounted to 1.4 percent of total gross margins, and the gross margins from other sidelines, except locker plants, amounted to another 1.0 percent of the total.

In most cases the locker plants realized a net profit in addition to having a favorable influence on butterfat receipts. Locker plants in connection with creameries averaged about 400 lockers and showed an average net gain of approximately $2.00 per rented locker. This was a much higher net gain than that secured by the average locker plant in the state.[12]

12. W. P. Cotton and F. U. Fenn, S. D. Agr. Exp. Sta. Bul. 360, *Frozen Food Locker Plants in South Dakota*, 1942.

Summary and Conclusions

More than 15 percent of South Dakota's farm cash income is from dairy products, of which 90 percent is sold in the form of cream.

South Dakota ranked 14th in the volume of creamery butter produced for the five year period, 1937-41.

Forty percent of South Dakota's creamery butter is manufactured in cooperative creameries.

About one-fourth of the cooperative creameries fail to measure up to legal requirements for cooperatives, and therefore are not exempt from federal and state income taxes.

Principal reasons for non-compliance with cooperative principles are:

1. More than 50 percent of business with non-members.
2. More than 10 percent of stock in hands of non-producers.
3. Dividends on stock represent an excessively high rate of interest.

Reorganization along strictly modern cooperative principles and adoption of the revolving capital plan should place control in the hands of farmers who are producer patrons, should increase patronage by members, and should satisfy legal requirements.

The majority of creameries have annual audits, but almost 25 percent of these audits are made by creamery officers. This, and a lack of uniform methods by different audit firms, leads to the preparation of monthly and annual statements whose usefulness for comparative purposes is greatly impaired because of their lack of uniformity.

Approximately 78 percent of the capital of cooperative creameries in South Dakota is furnished by members in the form of stock and surplus.

Interest rates paid by cooperative creameries borrowing from sources other than members varied from 3.5 to 8.0 percent. The higher rates were charged by commercial banks, and the lower by the Bank for Cooperatives.

In 1941, about 70 percent of the creameries studied had a better than 2 to 1 ratio of current assets to current liabilities, while only 9 percent had a current ratio below 1 to 1. This indicates a satisfactory current solvency of most plants, but serves also to emphasize the need of building up cash reserves during prosperous periods to meet less favorable circumstances.

Cream procurement cost records kept by most plants are inadequate. Procurement costs varied from .7 to 2 cents per pound butterfat for individual creameries. Graduation of commission rates and consolidation of routes

with elimination of route duplication should lower procurement costs materially. As an example of possibilities in reducing route duplication see Fig. 7.

The net returns available per pound of butterfat handled is the final measure of the efficiency of a creamery and of its desirability as a market for butterfat.

Net returns available are influenced by:

1. Volume of butterfat handled.
2. Method and cost of procurement.
3. Investment and fixed charges in plant.
4. Current operating costs.
5. Outlets for butter.
6. Quality of product.
7. Transportation and packaging costs.
8. By-product sales.
9. Sideline enterprises.

Creameries use various methods of building up and maintaining volume. Among these are:

1. Increasing membership business by lowering par value of stock and retaining patronage dividends for stock credit.
2. Paying on a monthly pool basis.
3. Supplying additional services, as making free deliveries by cream truck of meats stored in cooperatively owned locker plants.
4. Drawing trade by virtue of a likeable, efficient manager in whom the people have faith.
5. Operating the plant so efficiently that the net returns permit the payment of a price that is above that of competitors.

Cooperative creameries in South Dakota might do well to establish an overhead cooperative agency which would have the following advisory functions:

1. The allocation of truck routes to prevent transportation duplication.
2. Improvement of grading of cream.
3. The grading, pooling, packaging, and marketing of butter.
4. The establishment of standard and uniform accounting and auditing systems, and the publication of each creamery's annual operating statement.
5. The establishment of a uniform method of payment whereby labor and

clerical costs in the individual creamery might be reduced by eliminating butterfat tests and check writing for individual patrons as they may deliver cream.

6. The procurement of creamery supplies for all cooperative creameries in the state.

This step should be of little expense and at the same time should lower procurement and marketing costs, increase bargaining power, raise the quality and price of butter, and increase the efficiency of individual creameries. All of these would tend to increase the net returns available to individual patrons, and thus enable cooperative creamery associations to fulfill their primary function more effectively.