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Frozen Food Locker Plants in South Dakota

W. P. Cotton

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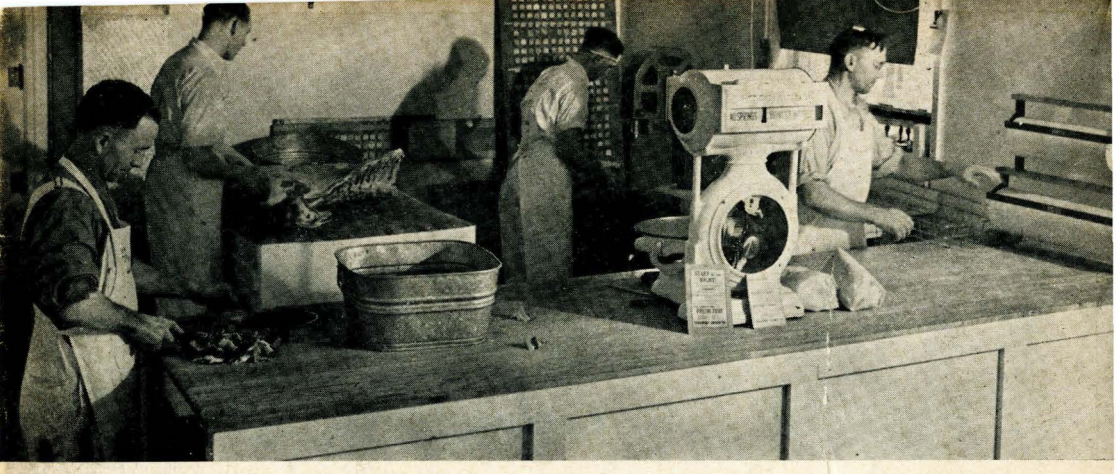

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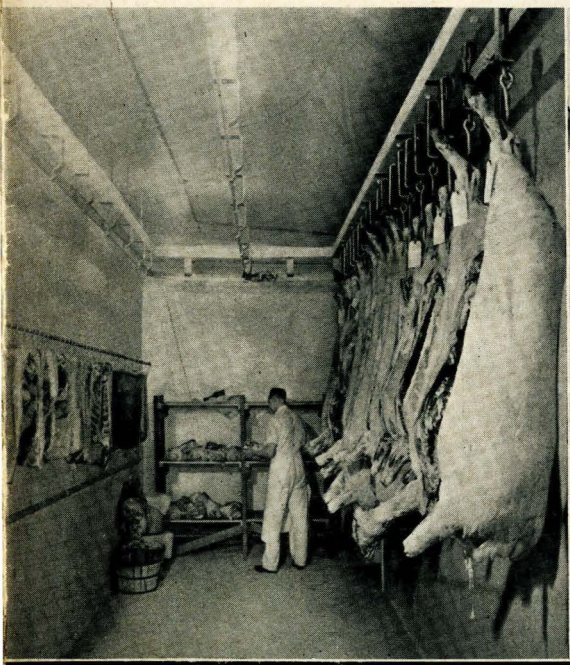

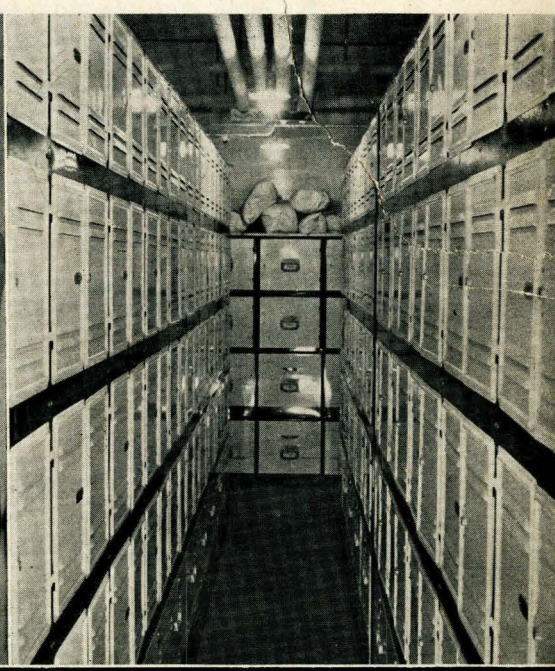

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Contents

Frozen Food Locker Plants in South Dakota

W. P. Cotton and F. U. Fenn[1]

The widespread adaptation of sharp freezing and the use of refrigerated lockers for the storage of meats, fruits and vegetables is a development largely of the past five years. There were an estimated 4,100 locker plants in the United States on January 1, 1942, and available records indicate that 94 percent of these were started since 1935.[2]

The development in South Dakota has been of even more recent date. On January 1, 1935, there were three frozen food locker plants in the state. Five years later there were 43, and on May 1, 1942, the state had a known 135 plants engaged in processing and storing refrigerated foods for individual consumers. These 135 plants had a total of approximately 20,250 lockers which were being used by an estimated 16,600 families or some 80,000 residents of a state whose total population is slightly over 600,000. In these 135 plants, some 8½ million pounds of fresh meats and considerable quantities of fruits and vegetables are sharp frozen and stored for consumption annually.

Extent and Purposes of Study

The objectives of this study were to determine the extent of the development of locker plants in South Dakota, to ascertain the present practices in the operation and utilization of these plants, and to determine the influence of the use of locker plants on the general level of living of the patrons.

The basic data used in the study were obtained in part from questionnaires sent to the managers of each locker plant known to be operating in the state on May 1, 1941, and from questionnaires obtained from 124 patrons of 21 plants scattered over the state. In the case of the first questionnaire, managers provided information regarding the development, use, services rendered, charges, products stored, type of patronage and the connection that the plant had with other businesses. The second questionnaire was used in obtaining information from patrons relative to their use of locker plants, benefits derived therefrom and their comments relative to the operation of their respective plants.

1. W. P. Cotton, Assistant Economist, and F. U. Fenn, Associate Animal Husbandman, South Dakota Agricultural Experiment Station. This study was made under the immediate direction of the Agricultural Economics Department with the Animal Husbandry Department cooperating. The authors wish to express their appreciation to the plant managers, butchers, patrons and others who cooperated so generously in making the data for this study available.
2. Personal communication with S. T. Warrington, Farm Credit Administration, April 7, 1942.

In addition, the butchers of 13 locker plants kept and made available 30-day records as to species, class, weight, grade, market price and live value relative to carcass value of each animal killed. These data were useful in determining the savings and other benefits secured by patrons.

Finally, a detailed survey was made of a limited number of representative plants for the purpose of obtaining information on available facilities, services rendered, charges, and financial operating statements. Plants were selected that conformed as nearly as possible to the following requirements:

1. Those that appeared to have reasonably good records of annual operations.[3]
2. Those that represented each of the more important types of business connection, size of plant ,type of ownership, age of plant, and that were distributed representatively over the state. All of these conditions were met fairly satisfactorily except that none of the plants thus selected were from west of the Missouri River.[4]

General Survey of All Locker Plants

Ownership, Business Association and Patronage

Ownership Largely Private. The information obtained from the questionnaires sent to all locker plants indicates that of the 101 plants reporting the type of ownership, about 83 percent were strictly private or partnership organizations and 12 percent, corporate institutions. Only 5 percent were cooperatively owned.

Business Association Varied. Most of the early plants were operated in connection with creameries and produce plants, but at the present time almost three-fifths are operated in connection with meat markets or grocery stores. During 1940 and the first half of 1941, 72 plants were established in the state and 55, or more than three-fourths of these, had a connection with either a meat or grocery business (See Figs. 1 and 2).

Original Plants Commonly Enlarged. There has been a tendency for most

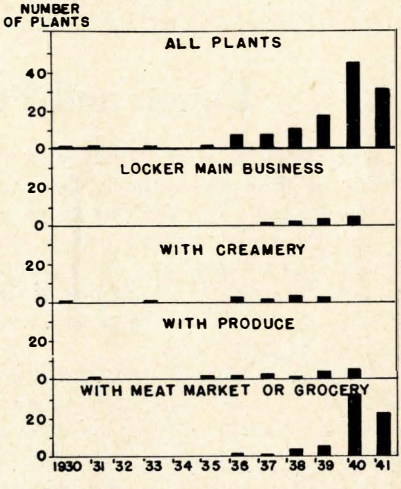


FIG. 1. HISTORY OF LOCKER DEVELOPMENT IN SOUTH DAKOTA, JANUARY 1930 to JULY 1941.

The total number of plants started each year by type of business connection is indicated.

3. This may have led to the selection of slightly superior plants, but on the whole rather representative of the whole group.
4. The majority of the West River plants are comparable to those in the eastern section, except that a higher percentage are limited-service plants and tend to charge lower locker rates.

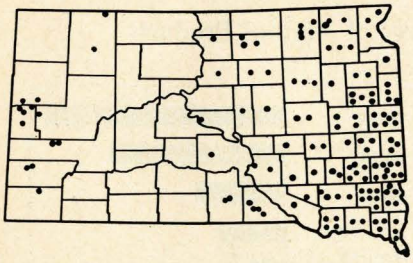


FIG. 2. LOCATION OF LOCKER PLANTS IN SOUTH DAKOTA AS OF MAY 1, 1942.

plants to increase their supply of lockers and this has been true particularly of the older plants, especially those operated by creameries. On July 1, 1941, the latter averaged more than twice as many lockers as they possessed in the earlier years. Plants started during 1940 and 1941, largely plants in connection with meat markets or groceries, had considerably fewer lockers when first established than plants started in connection with other businesses in earlier years. These newer plants had shown relatively smaller growth on July 1, 1941, than the older plants (See Fig. 3).

Percent of Lockers Kept Rented Associated with Age of Plants. The age of locker plant appears to have some influence on the percentage of lockers kept rented. Information obtained from 83 plants showed that 91 percent of 23 plants started before 1939 kept over 70 percent of their lockers rented, while only 75 percent of 60 plants started after January 1, 1939, kept over 70 percent of their lockers rented.

Patronage Area Largely Within 10 Miles of Plant. Only 28 percent of all plants surveyed reported having as many as 25 percent of their patrons living as far as 10 miles away. Creameries generally reached farther out for patronage than any other group. This is partially due to the fact that some creameries make delivery on their cream routes. It was not uncommon for plants of different types to report patrons 25 miles away, and one patron reported having a locker 54 miles away, which he visited weekly.

Locker Patrons in South Dakota Largely Farm Families and Home Owners. A summary of 124 patron questionnaires from 21 plants scattered over the state indicates that about 70 percent of the patrons are farm families and about 30 percent are town families. These responses also indicate that 69 percent of the patrons are home owners.

The percentage of patrons who were farm families seemed to be somewhat influenced by the size of the town in which the plant was located, with the larger towns having a higher proportion of their total patronage represented by town people. Some plants in towns of 10,000 or more reported as high as 50 percent of their patrons as town families.

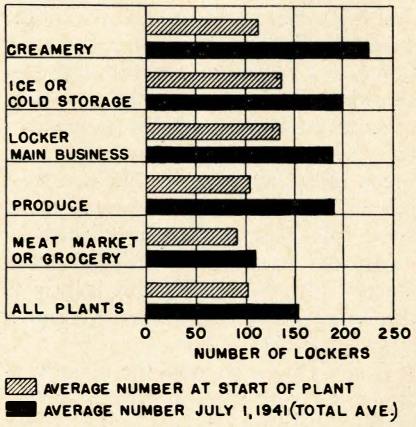


FIG. 3. ORIGINAL SIZE AND GROWTH OF PLANTS BY BUSINESS CONNECTIONS.

Average number of lockers per plant at start and on July 1, 1941.

Extent of Storage and Source of Various Products

Pork and Beef Most Commonly Stored Products. About 93 percent of all patrons stored pork and approximately 68 percent stored beef, while approximately 15 percent stored fruits and vegetables (See Fig. 4).

Records summarized of the total meat storage of 85 patrons of six plants scattered over the state indicate that the total average storage for a full year was 553.6 pounds of meat of all types. The distribution of this meat by kinds is shown in Fig. 5.

The seasonal distribution of beef and pork storage of 956 patrons as reported by three plants is shown by months in Fig. 6. This indicates that July, March and December represent the months of heaviest storage, respectively, and together account for about one-third of all beef and pork stored during the year.

Storage of Fruits and Vegetables Concentrated in Certain Areas of the State. There is considerable difference in the percentage of patrons who store fruits and vegetables in the several areas of the state (See Fig. 7). The southeastern section (Area 1 on Fig. 7) stores vegetables considerably more extensively than other areas. This is probably because factors favoring vegetable production are much more favorable in this area than others. The northeastern section (Area 2 on Fig. 7) has about one-fourth of its patrons storing fruits, mostly strawberries. This is probably due largely to the accessibility of Minnesota-grown strawberries in this area.

Records indicate that the storage of fruits and vegetables in Area 6 is very small. Since this area is in the Black Hills and includes an irrigated section which favors the production of such fruits and vegetables as strawberries,

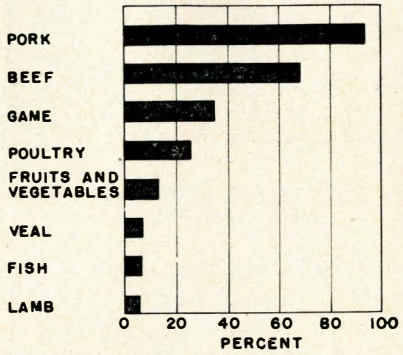


FIG. 4. PERCENT OF PATRONS STORING SPECIFIED PRODUCTS IN 1941.

An average of 85 patron records and an average of nine plant managers reports for meats (these weighted equally) and an average of 50 plant manager reports for fruits and vegetables were used.

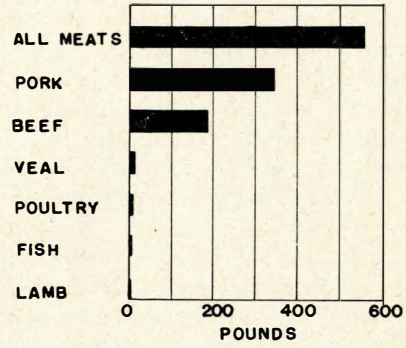


FIG. 5. AVERAGE NUMBER OF POUNDS OF MEAT STORED BY LOCKER PATRONS IN 1940.

Both the total and kinds for patrons who used a locker the full year are shown based upon a summary of 85 records taken at random from patrons in six plants.

raspberries, and asparagus, it appears that there might be considerable opportunity for expansion in the use of quick freezing for the preservation of these products. In fact, conditions suggest that there might be an opportunity to increase the production and storage of

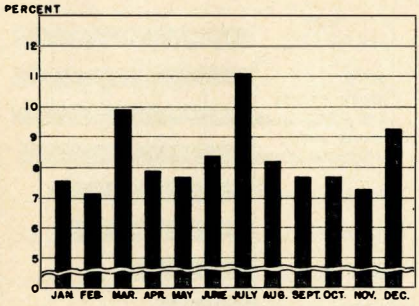


FIG. 6. AVERAGE MONTHLY DISTRIBUTION OF BEEF AND PORK STORAGE IN THREE LOCKER PLANTS 1940-41.
This represents storage by 956 patrons.

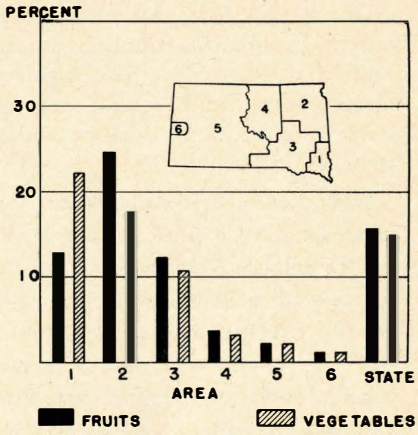


FIG. 7. PERCENTAGE OF PATRONS STORING FRUITS AND VEGETABLES IN 1940; CLASSIFIED BY AREAS IN SOUTH DAKOTA
This information taken from 68 plant reports plus 88 individual patron reports.

these products even to a commercial scale.

Source of Product and Frequency of Storage of Interest. Information on the frequency of storage and average length of storage in months of various products indicated that poultry is stored more frequently (although in comparatively smaller quantities) than other products, and that poultry, beef and fruits are stored somewhat longer than other products.

Reports from eight plant managers, selected at random, indicated that practically all vegetables and poultry and over 90 percent of the pork stored was home-grown by patrons, but that about 28 percent of the beef and 37 percent of the fruits were bought, largely at wholesale.

Locker Rental Rates and Services Rendered

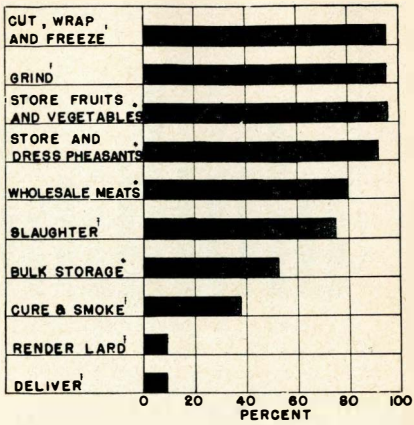
Most Common Annual Locker Rental Rates $10 and $12. Reports from 84 plants indicated that about 91 percent charged $12 to $12.50 per year for drawer type lockers and that 88 percent charged $10 per year for the slightly smaller open front type. A few plants, however, charged as little as $5 per locker per year. These were largely limited service plants in the Central and Western sections of the state.

Great Variation in Number of Services Rendered by Plants. The number and kind of services reported rendered by individual plants varied from simple maintenance of lockers in a refrigerated room in which patrons placed meat cut and wrapped by themselves, to plants that performed up to 10 services (See Fig. 8).

Patrons Dress Most of Poultry but Plant Employees Dress More of Other Animals. Reports from 15 plants indicated that practically 98 percent of all poultry is dressed by patrons, while one-half, or more, of the pork, beef, lamb

and veal is dressed by locker employees or some local butcher. Of all the animals killed and dressed less than 20 percent of each species had the operation performed at a plant. The balance was done right on the farm.

Inspection of Live Animals and Carcasses Largely Confined to That Portion Sold Wholesale. There was very little inspection of animals killed or carcasses stored by locker plant patrons. Inspection was largely confined to animals killed at packing plants from which the carcasses or parts of a carcass were bought in wholesale quantities by locker patrons through local markets.



* Reports from 15 plants selected at random.
† Reports from 101 plants.

FIG. 8. SERVICES RENDERED AND THE PERCENTAGE OF PLANTS SUPPLYING EACH.

Profitability of Plants

Are Plant Managers Optimistic over Plants' Profitability? In the general survey of all plants the question was asked, "Was your plant profitable in 1940?" Fifty-four plant managers answered this question. Their questionnaires were grouped according to the number of lockers that each plant had, and the percentage of lockers that were reported kept rented during 1940. With this double classification the percentage of each group stating that their business was profitable was computed. Results are shown in Table 1. From this the inference must be drawn that profitability increased both as the numbers of lockers per plant and the percentage rented increased. The percentage of plants reporting a profit was somewhat higher than was found in the detailed study shown in the next section. This may have been due to less successful plants ignoring the question, or may have been due to incomplete cost records in some plants.

Table 1. Profitability of Business in 1940—Percentage of Plants Reporting Profit by Size and Percentage of Lockers Rented.

Size of Business	Percentage of Lockers Kept Rented							
	Under 75	75-89	90 & Over	Total	Under 75	75-89	90 & Over	Total
	Number Reporting				Percent Reporting Profit			
Plants Under 150 Lockers	8	5	18	31	50.0	60.0	94.4	77.4
Plants with 150-299 Lockers	2	5	9	16	100.0	60.0	88.9	81.3
Plants with 300 Lockers or More	0	2	5	7	.....	100.0	100.0	100.0
All Plants	10	12	32	54	60.0	66.6	93.8	81.5

Detailed Study of a Limited Number of Plants

Facilities and Operating Practices

A list and brief description of the type of specified facilities found in 18 plants in the detailed study is shown by Table 2. Equipment commonly found in cutting and curing rooms consisted of hand and power saws, meat grinder, meat block, wall and counter scales, cleavers, slicers, wrapping table, and knives. Artery pumps, smoke houses, and lard rendering facilities were also found in a limited number of plants.

The number of lockers per 100 square feet of locker room space was much greater, and the space occupied per locker by all the other rooms was considerably less in the larger plants than in the smaller. This is just one feature of the economies secured from large scale plant.

Table 2. Description of Facilities in 18 Plants.[1]

	Building		Insulation				Size of Compressor				Refrigerant		Tiers of Lockers		
	Separate	With Other Business	Cork	Palco Wool	Wood Shavings	Zonolite and Other	Less than 3 tons	3 tons	4 tons	Over 4 tons	Ammonia	Freon Gas	4	5	6
No. of Plants	5	13	7	7	2	2	4	7	1	2	10	8	4	9	1

1. Answers were not obtained from all plants in some instances.

Table 3. Temperature of Refrigerated Rooms.

	Chill Room	Locker Room	Sharp Freezer
Average of 16 plants	+35°F	+6.5°F	−12°F
Range among plants	+30° to +39°F	0° to +10°F	−5° to −22°

Temperature of Various Rooms an Important Factor. For 16 plants reporting, the average and range of temperature kept for the various rooms is shown in Table 3.

Days of Aging Meat Varies with Kind and Quality. The average and range of days reported for aging beef and pork in the chill room before sharp freezing is shown in Table 4.

Table 4. Time of Aging Beef and Pork.

	Days of Aging	
	Beef	Pork
Average for 16 plants	6.3	2.4
Range within plants for different grades	3-14	
Range between plants	2-14	1-5

Considerable Variation in the Practices Employed in Handling Packages of Meat. All of the 16 plants reporting, wrapped and placed a description of the cut on the package, but only one of the 16 reported recording the weight or checking on the removal of packages from the locker.

Defrosting Practices Associated with Type of Refrigerant. The frequency and methods of defrosting varies considerably between plants and according to the type of refrigerant and coils used. Most ammonia plants defrosted by reversing the gas, while freon plants commonly defrosted by scraping. The majority of the plants defrosted from 4 to 6 times a year.

Service Charges Not Standardized. The amounts charged and the number

and percentage of plants reporting that made each charge for various services in the processing of meats, fruits, and vegetables, and for the slaughtering of beef and hogs is shown in Appendix Table 2a. Appendix Table 2b presents similar information on charges made in handling and freezing poultry and pheasants.

One measure of the degree of customer satisfaction with the services rendered by a plant and also with the satisfaction of patrons with their locker expenditures is the percentage of one year's patrons that continue as patrons the next year. In this regard it is significant to note that 13 of 14 plants reported that over 90 percent of the 1940 patrons were patrons in 1941.

Equipment Credit an Important Source of Locker Plant Financing. Reports from 12 plants showed that private capital, bank credit and equipment credit were all used to varying degrees by different plants in financing the installation of a locker plant. These reports indicate that equipment credit was a more important source of financing than bank credit.

Effect of Locker Plant on Affiliated Business Important Feature. It is difficult to measure the net profit or loss of a locker plant in dollars and cents, for a very important item is the effect that the addition of the locker system has on the affiliated business. Practically all operators approached on the question, "What effect has the addition of a locker plant had on your other business?" answered that it had brought an increase of volume. This was particularly true of plants in connection with meat markets and groceries, and true to a less extent with creameries and produce plants (See Table 5).

Plant Investment and Financial Operation

Investment per Locker Tends to Vary with Size of Plant. Appendix Table I shows the total investment and investment per locker installed for 16 plants,

Table 5. Effect of Locker Plant on Connected Business—As Reported by Operators.

	Small Increase	5-15% Increase	16-25% Increase	30% or Over	Total
Plants Reporting	6	3	1	4	14
Percentage of Total	42.9	21.4	7.1	28.6	100.0

and shows the detailed investment for those plants that reported in that detail. From this it may be seen that the investment in building, refrigeration equipment and lockers ranked in that order in the majority of the plants, and that the total investment per locker tends to decrease as the size of plant increases.

Method of Computing Costs and Income Per Plant. In arriving at the costs of operation and undistributed income[5] of 15 plants whose detailed costs are shown in Appendix Table 3, depreciation on equipment was charged at the rate of 10 percent and on buildings at 5 percent of the original cost. Interest on total investment was charged at 6 percent. Other costs were taken from actual plant records. (It must be recognized that in some instances investment in buildings and subsequent costs, as

5. In calculating the difference between costs and total income the residual is called undistributed income. This is because only in the case of three cooperatives has a charge already been made for management, and in the case of three owner-operated plants sufficient charge has not been made for the operator's labor. Therefore, the common term, undistributed income is used for all plants. To the cooperatives this undistributed income would represent a return available to the patrons. To the privately owned plants that had made a full charge for all labor, the undistributed income would represent a return to management. And to the owner-operated plants that had not made a charge for the owner's labor the undistributed income would represent a return to the operator's labor and management.

taxes and interest, are tied up intimately with the associated business and hence are necessarily set at a more or less arbitrary figure). Locker rental is shown separately from service income, which includes processing charges, income from slaughtering, and commission on wholesaling meat for storage to patrons, bulk storage, and other miscellaneous services.

The relative size of fixed and variable costs is interesting as the averages of plants in different size groups are compared (See Appendix Tables 3 and 4). This comparison shows that fixed costs comprise an increasingly large percentage of total costs as the plants decrease in size.

Wide Range in Costs and Income per Rented Locker. Because of the variation in size of plant, percent of lockers rented, and methods of management it is not sufficient to simply set forth the total amount of undistributed income per plant. When the various costs and incomes are reduced to dollars per rented locker, the operating statements of individual plants are ready for a much better comparison. Such data are shown in Appendix Table 4. Here, there was a great deal of variation in undistributed gain or loss per rented locker among the various plants, with a range from a net gain of $7.33 to a loss of $6.51. Even the three cooperatives, all of which were of near the same size and whose undistributed income was purely a return to patrons, varied in the amount of undistributed income per rented locker from $2.55 gain to $.42 loss. What were the factors that explain these variations?

Several Factors Responsible for Profit Variation Among Plants. Appendix Table 4 is arranged by groups of plants according to the number of lockers rented. This, of course, takes into considera-

Table 6. Relationship of Service Income over Labor and Management Cost Per Rented Locker to Undistributed Income.

Plants with Service Income over Labor Costs Per Rented Locker of:		Service Income over Labor Cost per Rented Locker	Undistributed Income Per Rented Locker
Over $5.00			
Plant No.	17	$9.39	$7.33
	16	7.48	6.60
	15	6.47	2.51
Average		7.78	5.29
$1 to $5.00			
Plant No.	18	3.19	2.55
	10	3.02	1.25
	1	2.43	6.00
	11	1.82	.61
	5	1.64	—2.19
	7	1.13	2.51
Average		2.21	1.79
Under $1			
Plant No.	14	.72	—5.52
	3	.46	.73
	2	.34	—.42
	12	—.20	—6.51
	6	—.96	2.03
	9	—3.67	—5.71
Average		—.55	—2.67

tion both the number of lockers installed and the percentage rented. Such a grouping shows that net income is distinctly favored by an increased number of rented lockers.

A grouping of plants by investment per locker installed, shows that 10 plants with an average investment of $44.17 per locker had a net loss per rented locker of 57 cents, while 5 plants, with an average investment of $26.50 per locker installed, had a net gain per rented locker of $3.49.

Appendix Tables 3 and 4 show that costs consist of rent, depreciation, interest, insurance, taxes, labor and management, light and power, water, paper, and miscellaneous items and that income was derived from locker rentals and service charges. If service income and labor and management costs are selected from the above items and the labor and management costs deducted from the service income per rented locker, this balance is very closely related to undistributed income per rented locker (See Table 6). This suggests that the plant manager should try to regulate his service charges and his labor costs so that each month would show a balance in favor of service income. In fact, Table 6 shows that only one plant out of 15 made a profit where labor and management costs exceeded *service income*. In other words, *locker rental income* is not usually sufficient to take care of costs other than labor and management.

Of the plants studied, pheasant dressing, freezing and storage were important sources of income. In fact, 5 out of the 6 plants showing the greatest profit per rented locker obtained an important part of their income from handling pheasants. Three of these plants handled 46,000 pheasants during the hunting season of the fall of 1941.

Electricity Cost High in Early Summer and Early Fall. The cost of power and light per rented locker is shown in Appendix Table 4. A summary of the records of three plants that had a detail of kilowatt hour consumption by months for the year July 1, 1940, to July 1, 1941, shows that the average electricity consumption per rented locker for the entire year was 77.5 kilowatt hours, with the heaviest consumption coming in the five months from June through October, and the lowest in January and December (See Fig. 9). All of

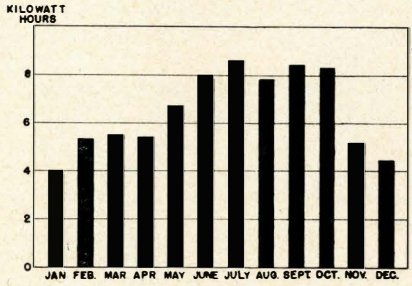


FIG. 9. MONTHLY ELECTRICITY CONSUMPTION PER LOCKER RENTED FOR 1940.

These totals are based upon an average of three plants with a range of 104-110 lockers rented.

these plants were small ones. The monthly distribution for larger plants probably would be little different, although the total consumption per rented locker would be considerably smaller usually, as is indicated by Appendix Table 4. Indications are that summer electricity consumption was large not only because of prevailing temperatures but also because of heavy meat storage during this period (See Fig. 6).

Cost of Wrapping Paper an Important Item in Locker Plants. Measured in dollars spent per year per plant or in cost per 100 lbs. of meat wrapped, the waxed wrapping paper used in locker plants is an important item. Records of 10 plants

show that the average cost of paper per 100 lbs. of meat wrapped was 17.4 cents, with paper figured at 10 cents a pound. For those plants that received 1 cent a pound for cutting, wrapping and freezing meat this paper cost alone represented 17.4 percent of this service charge (See Appendix Table 6).

Locker Plants from the Patron's Viewpoint

In order to secure information from locker patrons relative to their occupation, economic status, size and composition of family, distance from plant, frequency of visits to plant, attitude toward savings, storage practices, effects of storage, and statement of advantages and criticisms, questionnaires were secured from 124 patrons representing 21 plants in the fall of 1941. A summary of reports as given in these questionnaires is presented in Table 7.

Table 7. Summary of 124 Patron Questionnaires From 21 Freezer Locker Plants In South Dakota, September, 1941.

1. Occupation	
a. Number answering	124
b. Farm	87
Percent	70.2
c. City	37
Percent	29.8
2. Home Owner	
a. Total answering	123
b. Yes	85
Percent	69.1
c. No	38
Percent	30.9
3. Average Distance to Plant	6.7 miles
4. Average Length of Patronage	2 years 2 months
5. Average Weekly Visits to Plant	2
6. Average Number in Family	4.3
a. Males over 14	1.9
b. Females over 14	1.6
c. Between 7-14	.5
d. Under 7	.3
7. Does Locker Save Money	
a. Total answering	100
b. Yes	72
c. No	28
8. Average Number of Lockers Used	1
9. Cost Per Month	$ .79
10. Cost Per Year	$9.46
11. Parts of Animals Used Without Being Put in Locker	
a. Beef	
	No. Reporting
1. Bony part	13
2. Liver	14
3. Head	4
4. Tongue	7
5. Heart	8
6. Other	6
b. Pork	
	No. Reporting
1. Bony part	11
2. Fat	17
3. Shoulder	6
4. Head	19
5. Liver	31
6. Bacon	4
7. Ham	6
8. Heart	11
9. Other	8
12. Do You Cooperate With Neighbors in Killing and Storing Animals?	
a. Number answering	75
	Percent
1. Yes	20
2. No	80
13. Seasons in Which Meat Consumption is Most Affected	
a. Number reporting	84
	Percent
1. Spring	5.9
2. Summer	77.4
3. Fall	9.5
4. Winter	7.2
14. Do You Store Vegetables in Locker?	
a. Number reporting	105
	Percent
1. Yes	12.4
2. No	87.6
b. Kinds stored	
	No. Reporting
1. Peas	6
2. Beans	7
3. Corn	5
4. Asparagus	2
c. How long have you been storing vegetables (average)?	1 year

d. Average quantity stored — 23 pints
e. Which vegetable has been best to store? — beans and peas
f. Increase in storage of these — considerable
g. Which vegetable stored has given least satisfaction? — corn on cob
h. Difficulties — tough and tastes flat

15. Do You Store Fruits?
a. Number answering — 86

	Percent
1. Yes	18.6
2. No	81.4

b. Kinds stored

	No. Reporting
1. Strawberries	13
2. Raspberries	4
3. Others	2

c. Average quantity stored — 22 pints
d. Which fruit has been best to store? — Strawberries

16. Has Locker Affected the Amount of Fruit Canned at Home?
a. Number answering — 8

	Percent
1. Yes	25
2. No	75

17. Has Locker Affected the Amount of Vegetables Canned at Home?
a. Number answering — 8

	Percent
1. Yes	25
2. No	75

18. In What Season Has Locker Most Affected Consumption of Fresh Fruit and Vegetables?

	Percent
1. Spring	
2. Summer	50
3. Fall	
4. Winter	50

a. What has been the effect? — Increased Consumption

19. If You Do Not Store Fruit and Vegetables, Why Not?

	No. Reporting
a. Not enough to store	18
b. Refrigerator at home	1
c. Had locker short time	5
d. Too far from home	5
e. Cheaper to buy canned goods	3
f. Other	16

20. Are You Purchasing Frozen Fruits or Vegetables?
a. Number answering — 41
1. Yes — 10
Regularly — 2
Infrequently — 8
2. No — 31
b. Has the locker affected these purchases?
1. Number answering — 7
2. a. Yes — 3
b. No — 4

21. Advantages of Locker
a. Number answering — 63
1. Does locker improve meat?

	Percent
Yes	84.1
No	15.9

b. Cost of meat before and after use of locker

	Percent
1. Number answering	27
2. Less after	77.7
3. More after	22.3

c. Specific advantages of locker given

	No. Reporting
1. Have more fresh meat	32
2. Cheaper	21
3. More convenient	9
4. Better quality meat	21
5. Know quality of meat you are consuming	3
6. Less work at home	12
7. Only place to store game	5
8. Other	20

22. Criticisms
a. Meat

	No. Reporting
1. None	44
2. Costs high	8
3. Loses flavor and freshness after time	15
4. Discolors	2
5. Too far away	6
6. Meat spoiled	2
7. Poor service	3
8. Locker too small	1
9. Not too clean	1
10. Loss of meat from theft	2

b. Vegetables

1. None	3
2. Too far away	1
3. Does not keep fresh	1

c. Fruits

1. None	3
2. Filling glass jars too full and breakage	1

d. General

1. Lack of civil answer from operators	1

Kind and Quality of Meat Stored

Data on Kind and Quality of Meat Animals Killed by Patrons Limited. In an effort to determine the quality of meat animals killed by patrons and the savings effected by slaughtering their own animals rather than buying at wholesale, the cooperation of the butchers at 13 plants was enlisted. These men kept records on all animals they slaughtered for locker storage during a 30 day period in May and June of 1941. These records covered 370 animals and showed the species, class, grade, live weight, estimated live price, value of offal, and weight, grade, and wholesale price of the carcass of each animal.

A summary of these records shows that in number of animals killed 76.5 percent were hogs, 20.8 percent were cattle, and 2.7 percent were sheep and lambs; but by carcass weight beef represented 30.5 percent, hogs 68.8 percent, and sheep and lambs .7 percent of the total; that 50.0 percent of the pork carcass weight was from butchers and 46.0 percent from sows; 45.9 percent of the beef carcass weight was from heifers, and 42.4 percent from steers, with only 9.3 percent from cows and bulls; and that 90.9 percent of all pork and 77.5 percent of all beef carcasses graded good or better. Indications were, however, that beef slaughtering constituted a significantly larger proportion of total carcass weight in the southeastern part of the state than in the middle eastern section, and still a larger proportion than in the northeastern section. The percentage of total carcass weight represented by beef during this 30-day period for the different sections was: Southeast, 46.0 percent; Middle East, 24.8 percent; and Northeast, 2.0 percent. These were the records from 6 Southeast, 5 middle-east and 2 Northeast plants, and covering 131, 186, and 53 animals slaughtered in the separate sections, respectively.[6]

Savings and Benefits Accruing to Locker Patrons

All Benefits Are Not Measurable in Dollars and Cents. The continued success and growth of the frozen food locker industry is dependent upon the considered judgment of the patrons as to the benefits and better living, greater convenience, and financial savings derived from locker use in the storage of fresh and perishable food products. It is difficult for any patron to measure these benefits in dollars and cents alone. There are many other factors to consider (See Table 7). With a farm family which has been in the habit of consuming largely cured or canned meat, the benefits derived from a supply of fresh meat are not entirely a matter of money. For the city housewife who uses a locker, the benefits derived are not entirely just the amount that may be saved by purchasing in wholesale quantities for storage rather than at retail. The quality of the meat obtained is important both from a standpoint of market value and satisfaction in preparation and consumption in the home. To many families the benefits of storage of fresh fruits and vegetables in the locker must be at least partly measured in the improvement of the diet during the period of consumption. These considerations should be kept in mind in ex-

6. While these data are limited in both period and plants covered, particularly in the Northeast section, it is felt that it is the best indication available of the kind, grade and quality of meat stored by sections.

amining the material below which attempts to present the net result of those factors which are measurable in dollars and cents.

Net Savings Effected by Slaughtering. Appendix Table 5 presents a financial analysis of the outcome secured in slaughtering 239 hogs, 71 cattle and calves, and 7 lambs. This material is based on data furnished by the 13 butchers noted above and is presented by grades of animals. This table shows for each grade the average live weight, live price, live value, carcass weight, dressing percentage, carcass price, carcass value, value of offal, cost of killing, and net margin gained per carcass per 100 pounds of live weight, and the net margin as a percentage of the live price. These records indicate, that at this particular period, the net margin gained represented a higher percentage of the live price of steers than of any other class of beef cattle, with the percent of live price gained ranging from 14.5 on good steers to 18.8 on medium steers. All veal calves killed showed a net loss in value, and hence a reduction in live price.

In hogs, sows showed the greatest net return over live price, presenting a net live price gain ranging from 13.9 percent for poor grades to 20.7 percent for good and better grades. Butcher hogs' net gain over live price averaged around 15 percent.

Patrons' Savings Dependent on Several Factors. The net financial result of frozen food locker storage is dependent on several variable factors. Some, exclusive of transportation and time involved in locker visits are:

1. Pounds of meat stored during rental period.
2. Wholesale or retail margins considered.
3. Dressing percentage of animal.
4. Live price of animal.
5. Processing charge per 100 pounds of meat stored.
6. Rental cost of locker.

What are the Comparative Savings on Storing Beef and Pork at Equal Live Prices? The above figures indicate that 15 percent of the live price of good or medium steers, or of butcher hogs and sows, is a reasonable net gain to be expected from slaughtering when the live value plus killing costs is compared to the wholesale carcass plus offal value. But since the dressing percentage of cattle is considerably lower than that of hogs, it requires about 900 pounds of live beef to produce 500 pounds of carcass, while only 700 pounds of live pork will produce 500 pounds of dressed carcass. Obviously then, if the live price of pork and beef are both the same and the percent gained on the live price of each is 15 percent, the credit per 100 pounds of beef stored will be greater than the credit on 100 pounds of pork stored. For example:

900# beef killed worth 10c lb. with slaughter gain of 15% = $13.50 credit.

$13.50 credit divided by 500# beef stored = $2.70 credit per 100# carcass stored.

700# pork killed worth 10c lb. with a slaughter gain of 15% = $10.50 credit.

$10.50 credit divided by 500# stored = $2.10 credit 100# carcass stored.

To use Fig. 10 lay a ruler from the locker rental of $10 on the left hand side to the price of the live animal killed on the right (See sample diagonal line drawn). Then look for the point of intersection of the ruler and the vertical dotted line representing the pounds stored. From this intersection look horizontally across to the scale showing loss or gain to determine financial results for this particular case.

In the example shown 600# of meat stored from a beef whose live price is 14c allows the patron to just break even when retail margins are not considered.

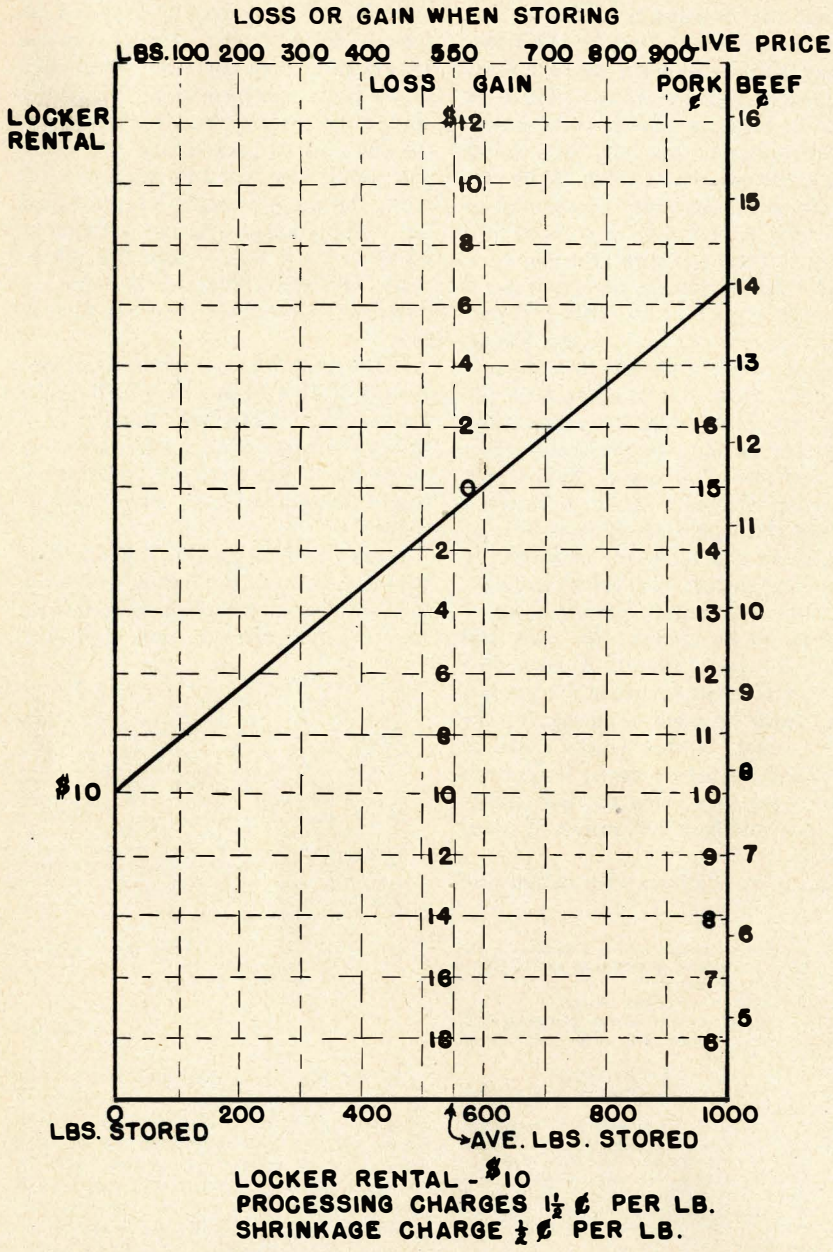


FIG. 10. PRODUCER'S FINANCIAL RESULTS FROM LOCKER USE.
Wholesale carcass prices only are considered.

What are Savings or Costs to the Farm Family Which Does Not Ordinarily Buy Meat? Obviously, in such cases the question to them is their preference for fresh meat as against cured meat. But since they do not buy, they would consider the wholesale value of the carcass minus killing costs as compared to its live value, and also the costs of processing and storage. Using the above example a family storing pork that has a live market price of 10 cents a pound could expect a net gain in the killing operation of $2.10 per hundred pounds of dressed meat. But in addition to the locker rental this family has a processing charge for cutting, wrapping and freezing, and also a shrinkage loss. If the processing charge is $1.50 a hundred and the shrinkage loss 50 cents a hundred, there is a total cost of $2.00 per hundred to deduct from the killing gain of $2.10 per hundred, leaving a net of 10 cents to be credited for each 100 pounds of pork stored. Against this credit of 10 cents for each 100 pounds stored must be made a charge for the locker rental. If this yearly rental is $10.00 and the patron stored 550 pounds of pork per year, then the net cost of storage would be $10.00 minus 55 cents, or $9.45.[7]

Fig. 10, P. 17 shows what dollars and cents loss or gain may be expected by such a farm family storing various amounts of pork or beef when live prices are at specified levels. Using the above charges it may be noted that when the live price of pork is above 9.6 cents per pound and that of beef above 7.5 cents, the more pounds that are killed for storage the greater the amount of credit to offset locker costs. But where prices fall below these levels every additional pound stored increases the net cost.

What are Savings, or Costs, to a Farm Family Which Would Buy at Retail if Locker Were Not Used? For the farm family that would buy fresh meat at retail if the locker were not used the retailer's margin must be taken into account.[8]

Figure 11 is designed to show the savings or costs to such a family with varying amounts of meat stored, and with specified live prices on pork and beef,

7. If we let:
d = slaughtering savings or net difference in the value of 100# of dressed pork and its equivalent live weight.
p = processing and shrinkage charges
b = slaughtering savings minus processing and shrinkage charges per 100# meat stored (b = d — p)
X = hundreds of pounds of meat stored.
a = rental cost of locker (therefore a is a minus quantity).
Y = net savings or costs accruing from locker use.
Then, we can make use of the equation:
Y = a + bX, which gives a straight line relationship between savings and pounds of meat stored. For example, if d = $2.10 and p = $2.00, then b equals 10c. And if the locker rental = $10 and 550 pounds of meat is stored we would have:
Y = —$10.00 + .10 (5.5) or
Y = —$9.45, or $9.45 net cost.

8. To do this we let m = retailer's margin. Then we revise equation above from b = d — p to b = d — p + m and then proceed with the same equation Y = a+ bX. For example, if the net gain per 100 pounds of dressed pork from the killing operation is $2.10 with live pork at 10 cents, and the difference per 100 pounds between the wholesale and retail price of dressed pork is $4.00, and the processing and shrinkage charge is $2.00 then the credit allowed for each 100 pounds of pork stored is b = d — p + m or b = $2.10 + $4.00 — $2.00, or b = $4.10. Then if such a family stored 550 pounds of pork at a live price of 10 cents the savings would be:
Y = —$10.00 + $4.10 (5.5)
Y = $12.55
And for the same amount of beef at the same live price of 10 cents it would be:
Y = —$10.00 + $4.70 (5.5)
Y = $15.85

To use Fig. 11 to determine loss or gain for the farm family when a retail margin of 6c is considered, lay a ruler from the point indicating live price of animal on the left hand scale to the point indicating pounds stored on the right hand scale. Where this ruler crosses the intermediate scale the loss or gain is indicated. The spacing on the scales is due to the necessary use of logarithms rather than natural numbers, hence the logarithmic scale.

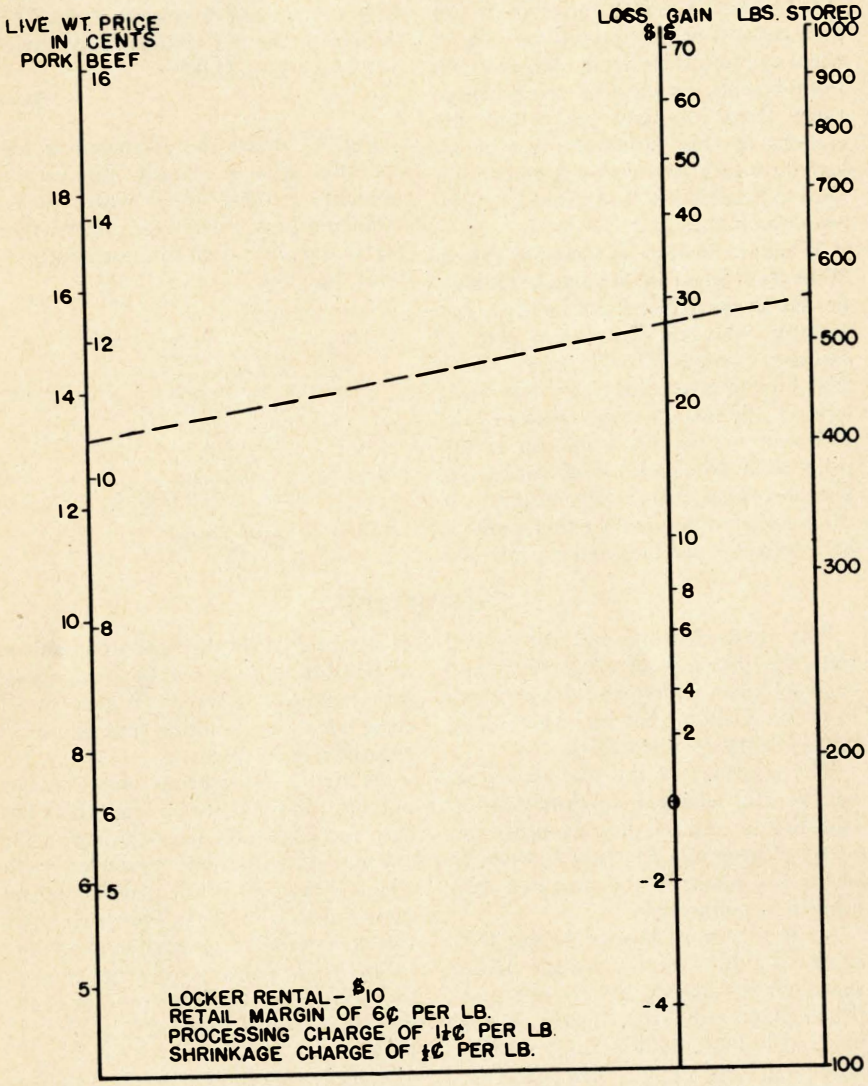


FIG. 11. PRODUCER'S FINANCIAL RESULTS FROM LOCKER USE.
A retail margin of 6c is considered.

when a retail margin of 6 cents, processing charge of 1½ cents per lb., and a locker rental of $10 per year are considered.

If the locker rental varies from $10 then the loss or gain would vary by an equal amount. If the retail margin varies from 6 cents, or the processing charge varies from 1½ cents per pound the amount of this variation must be allowed for each pound stored, and would need to be added or subtracted from the loss or gain indicated by Fig. 11.

What are Savings, or Costs, to Patron Who Buys Meat in Wholesale Quantities for Locker? For those families, city or farm, who buy carcasses or parts of carcasses wholesale and store, rather than buying at retail the constant credit for each 100 pounds stored would be the difference in the retail margin (retail price over wholesale) and processing plus shrinkage charges. For example, if the retailer's margin on either pork or beef were $4 per hundred weight and the processing plus shrinkage charges were $2 per hundred weight and the family stored 550 pounds per year the credit would be $11.00. From this the locker rental of $10 must be deducted to determine the net savings, thus leaving a net saving of $1.09[9].

Fig. 12 shows the estimated savings for this type of family for varying amounts of meat stored with specified retail margins prevailing. (Instructions for its use are similar to those appearing with Fig. 11).

9. Let:
m = retailer's margin
p = processing charges
b = m — p, or gross savings for each 100# of meat stored
Y = net loss or gain
a = locker rental
$Y = a + bX$
Then, at a 4c retail margin
$Y = -\$10 + (\$4 - \$2)\ 5.5$
$Y = \$1$
And at a 6c retail margin:
$Y = -\$10\ (\$6 - \$2)\ 5.5$
$Y = \$12$

Summary

The sharp-freezing and subsequent refrigerated storage of meats, fruits and vegetables is a widespread development in South Dakota that has come about largely in the past five years.

The tendency in the past two years has been for new locker plants to be established in connection with meat markets and groceries. On July 1, 1941, 55 of the 116 plants in the state had such a business connection.

Many plants established before 1937 rendered little service except locker space, while most of the recently established plants provide a variety of services, including slaughtering, cutting, wrapping, grinding, sharp-freezing, wholesaling, and to a less extent curing, smoking and rendering.

It is estimated that about 15 percent of the residents of the state are members of families that are regular frozen food locker patrons. About 70 percent of these are farm families, and about 30 percent live in towns.

At first most patrons stored meats only. But in the past two years there has been a considerable development in the storage of fruits and vegetables, with about 15 percent of all patrons storing these products in 1941. This percentage varied materially from section to section.

Surveys of patrons and plant managers indicate that about 95 percent of the patrons in 1940 continued as patrons in 1941.

Records kept by butchers of 13 plants for a 30 day period on 370 animals killed by them for patrons indicate that a large majority of animals killed were of good

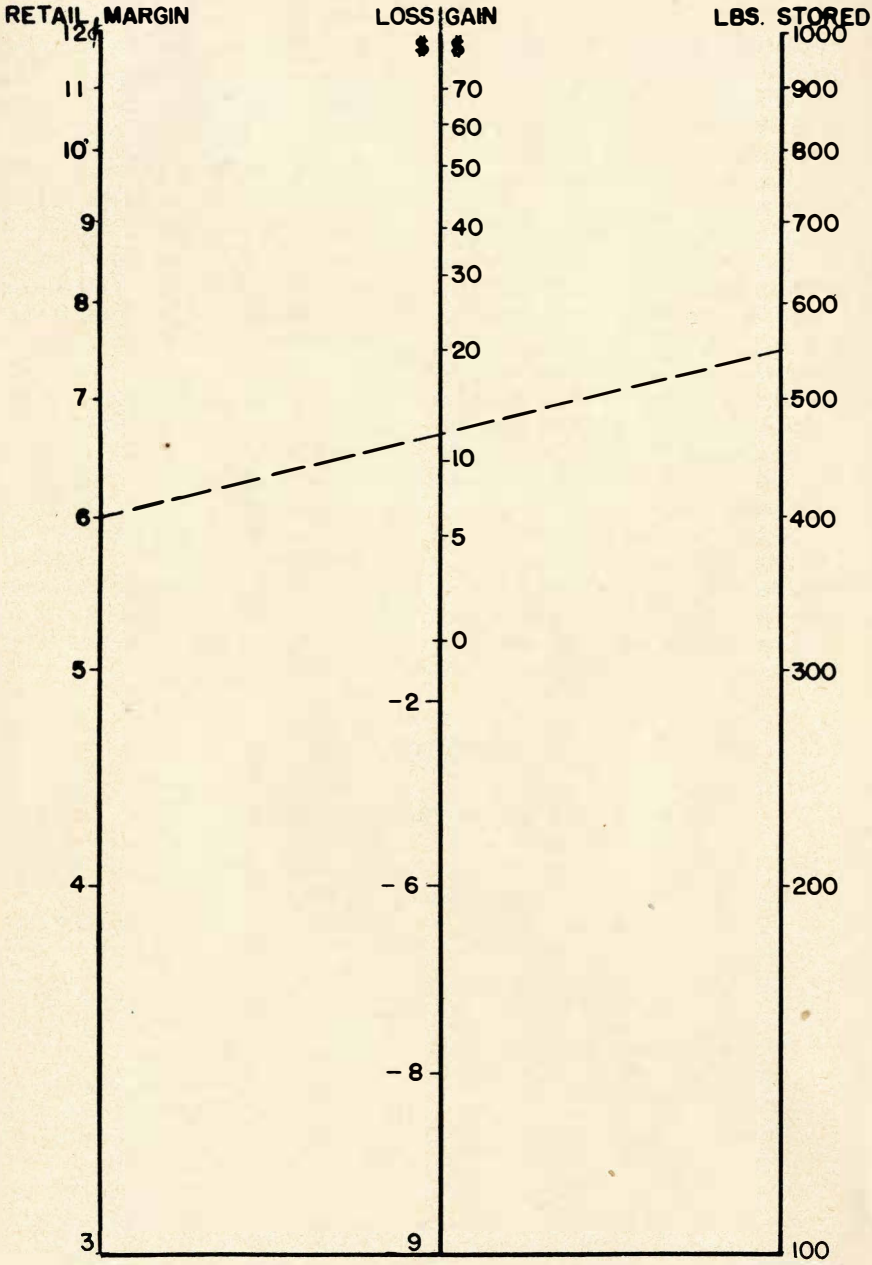


FIG. 12. FINANCIAL RESULTS OF LOCKER USE BY PATRON WHO BUYS IN WHOLESALE QUANTITIES.
Various retail margins are considered.

or better grades; and that the net difference in the live animal's market value and the wholesale value of the carcass and offal, with all costs deducted, was equivalent on the average to 15 percent of the live value.

Fifteen locker plants in the state studied in detail had an average of 245 lockers and an average investment of $8,440.94. The annual undistributed income per rented locker of these 15 plants averaged 78 cents after interest, depreciation, taxes, labor, and other operating expenses except management, were deducted as costs. However, five of the fifteen plants failed to cover these operating costs, and the range of undistributed income per rented locker was from $7.33 profit to $6.51 loss.

There are a number of factors that affect net income per rented locker. Of these the relative size of labor and management costs to service income appears to be most important. Other strong influences on net income are number and percentage of lockers rented, investment per locker, rental income per locker, power and light charges per locker rented and the importance of pheasant handling as a source of income.

Of 124 patrons surveyed 72 percent thought that lockers saved them money. But financial results were not the only attraction. A better quality of meat, a continuous supply of fresh meat, fruits and vegetables, and less work at home were other very important considerations.

Dollars and cents savings resulting from locker use are dependent on a number of factors. Among these, the most important are: (1) Number of pounds of product stored, (2) Wholesale and retail margins considered, (3) dressing percentage of the animal, (4) live price of the animal, (5) processing charge per pound, and (6) locker rental charge. For detailed results see Figs. 10, 11 and 12.

Suggestions

To Locker Plant Operators:

1. Keep premises clean and attractive.
2. Insist on strict sanitary measures relative to all products accepted for storage.
3. Maintain recommended temperatures.
4. Thoroughly clean and sterilize all equipment each day, particularly meat grinders.
5. Insist on proper preparation of meats, fruits and vegetables for storage. (Use extension circulars on this subject as guides).
6. Keep records on all costs and income of your locker plant, and make a check-up each month. It will pay.
7. Remember that depreciation charges on equipment and building must be made.
8. Regulate service charges both according to labor costs and price of live animals.
9. See if you can't make use of excess space as storage room for fruits and vegetables at attractive rates.
10. Courtesy pays dividends.
11. Study improved packaging that will also enable patron to find a particular cut of meat. He will appreciate it.

To Patrons:

1. Make as complete use of your locker as possible. Usually the more you store the less are total costs per pound.
2. Storage of fruits and vegetables will enable you to make greater use of your locker.
3. To secure a good product from your locker you must store goods of quality.
4. After selecting quality goods for storage handle them in an acceptable and sanitary manner.
5. Secure extension material from your plant manager on the selection and preparation of meats, fruits and vegetables for storage, and on their care and preparation for use upon removal from the locker.
6. Farmers, when live pork and beef prices rise relative to processing and storage charges your savings from slaughtering and locker use are greater.
7. Cooperate with your neighbor in securing frozen products from your locker, thus saving mileage and time.

Appendix Table 1. Investment in Plant — By Groups Arranged According to Size

Groups by Total No. of Lockers	Year Started	Total No. of Lockers	Average No. Rented	Investment								
				Building[1]	Insulation	Refrig. Equip.	Lockers	Processing Equipment	Total Equipment	Total Investment	Total Per Rented Locker	Total Plant Investment per Locker Installed
I. Plants with 350 or more lockers												
Plant No. 2	1938	425	350	$7019	$	$	$	$	$5625	$12,644	$36.12	$29.75
No. 6	1937	385	350	5000					6569	11,569	33.05	30.05
No. 7	1937	437	400	5516		2920	2253	1014	6187	11,703	29.25	26.78
No. 16	1938	460	414	5000					14000	19,000	45.89	41.30
No. 17	1939	365	292	2500					8000	10,500	35.96	28.76
Average		415	361	5007					8076	13,083	36.05	31.55
II. Plants with 250-349 lockers												
No. 1	1936	315	250	1000		2200	1418	810	4428	5,428	21.71	17.23
No. 11	1940	260	200	4000					6700	10,700	53.50	41.15
Average		287	230	2500					5564	8.064	37.46	28.10
III. Plants with 150-249 lockers												
No. 9	1940	155	105	3000					3300	6,300	60.00	40.64
No. 12	1940	152	100	2200		2400	891	700	3991	6,191	61.91	40.73
No. 18	1938	201	194	3000	1200	2600	1125	400	4125	7,125	36.72	35.45
Average		169	133	2733					3805	6,538	52.88	41.06
IV. Plants with less than 150 lockers												
No. 3	1940	140	104	1430		2870	720	710	4300	5,730	55.10	40.93
No. 5	1939	124	102	3000					5000	8,000	64.52	78.43
No. 10	1939	142	130	2000					4000	6,000	46.15	42.25
No. 14	1940	60	42	500	1250	1800	300	100	3450	3,950	94.05	65.83
No. 15	1940	104	93	1000		2563	572	765	3900	4,900	52.69	47.11
Average		114	94	1586					4130	5,716	62.50	44.27
Average of All		**248**	**209**	**3078**					**5572**	**8,650**	**41.38**	**34.87**

1. In some cases an arbitrary figure because of an associated business in the same building.

Appendix Table 2a. Service Charges on Beef, Pork, Fruits and Vegetables, As Reported by 18 Plants (Percentage Reporting That Made Specified Charge)

Charges-Cents	Cutting Wrapping and Freezing (lbs.)	Grinding (lbs.)	Curing and Smoking (lbs.)	Wholesale commission on Meat (lbs.)	Lard Rendering (lbs.)	Freezing of Fruits and Vegetables (lb.)	(quart)	Slaughtering Animals On Farm Beef (head)	On Farm Hogs (head)	At Plant Beef (head)	At Plant Hogs (head)
No charge						23	60				
Less than 1						15					
1	78	100		36		54					
1½	22					8					
2				50	100		20				
3			11	14							
4			89								
5							20				
Dollars											
1.00									25	20	60
1.25									25		
1.50								38	50	40	40
1.75										20	
2.00								24			
2.50								38		20	
Total Percentage	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number Plants Reporting Service	18	15	9	14	1	13	5	8	8	5	5

Appendix Table 2b. Service Charges on Poultry and Pheasants, As Reported by 13 Plants (Percentage Reporting That Made Specified Charge).

Charges (Cents)	Chickens Dress (head)	Draw (head)	Wrap & Freeze (lbs.)	Wrap & Freeze (head)	Pheasants Dress (head)	Draw (head)	Dress, Wrap & Freeze (head)	Wrap & Freeze (head)	Turkeys Dress (head)	Draw (head)	Wrap & Freeze	Dress, Wrap Freeze (head)
1			43									
1½			29									
2			14									
2½			14									
3				17								
4		14										
5	17	72		83		40	13					
7					20							
8						20				100	100	
10	83	14			60	20	87					
15					20	20		22	100			
20								22				
25								45				33.3
35												33.3
40								11				
85												33.3
Total Percentage	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number Plants Reporting Service	6	7	7	6	5	5	8	9	1	1	1	3

Appendix Table 3. Annual Operating Costs and Income of 15 Locker Plants—By Groups According to Months Lockers are Rented

Group	No. of Plant	Total No. of Lockers	No. of Lockers Rented	Fixed Costs[4] Rent	Deprec.	Int.	Ins. and Taxes	Variable Labor & Management[1]	Lights and Power	Water	Paper	Miscl.	Total	Total (b) Costs	Income Locker	Service	(a) Total	Undistributed Income (a-b)
I																		
Plants	2[1]	425	349		852	715	327	1894	1542	462		450	614	3068	4963	3154	1663	4817	—146
with	6[1]	385	350	300	391	390	343	1424	3560	637			603	4800	6225	3712	3221	6933	708
over 250	7[1]	437	400		458	615	379	1452	3208	596	98	377	960	5239	6690	4036	3660	7696	1006
lockers	16[3]	460	414	400	1400	840	133	2773	1831	669	50	453	815	3818	6590	4395	4928	9323	2733
rented	17[3]	365	292		925	630	291	1846	2460	480			1374	4314	6159	3097	5201	8298	2139
Average		**415**	**361**	**350**	**805**	**638**	**295**	**1878**	**2520**	**569**	**74**	**427**	**873**	**4248**	**6125**	**3679**	**3735**	**7413**	**1288**
II																		
151-250	1[3]	315	250		493	265	125	883	1597	525		150	50	2322	3205	2500	2206	4706	1501
lockers	11[3]	260	200	240	670	402	134	1446	1090	480	35	120	260	1985	3431	2100	1454	3554	123
	18[3]	201	194	100	533	320	256	1209	1200	390			367	1957	3164	1840	1819	3659	495
Average		**259**	**215**	**170**	**565**	**329**	**172**	**1179**	**1296**	**465**	**35**	**135**	**226**	**2088**	**3267**	**2147**	**1826**	**3973**	**706**
III																		
150	3[2]	140	104		267	200	90	559	450	220		63		733	1292	1044	494	1538	246
lockers	5[3]	124	102		500	300	153	953	780	133		128	276	1317	2270	1098	948	2046	—224
or less	9[3]	155	105		480	198	97	775	1200	250			110	1560	2335	1100	815	1915	—420
	10[2]	142	130		500	360	167	1027	413	374	38	88	3	916	1943	1328	778	2106	167
	12[3]	152	100		500	372	68	940	650	472		47	140	1309	2249	1076	630	1706	—543
	14[2]	60	42	60	245	122	75	502	150	135		25		310	812	400	180	580	—232
	15[3]	104	93		440	294	136	870	300	293		35		628	1498	830	902	1732	234
Average		**125**	**97**	**60**	**419**	**264**	**112**	**804**	**563**	**268**	**38**	**64**	**132**	**968**	**1771**	**982**	**678**	**1661**	**—110**
Total Average		**248**	**209**	**220**	**577**	**402**	**185**	**1237**	**1362**	**408**	**55**	**176**	**464**	**2285**	**3522**	**2114**	**1927**	**4041**	**519**

1. Management charge is included only for plants 2, 6, 7 which are cooperative plants. Here undistributed income is return to patrons, or surplus.
2. Undistributed income is return to operator's labor and management.
3. Undistributed income is return to management.
4. In some cases these costs were necessarily set at arbitrary figures because of an associated business over which total fixed costs were ditributed.

Appendix Table 4. Operating Costs and Income Per Rented Locker—By Groups Arranged by Size of Plants

Groups by No. Lockers Rented	No. Lockers Rented	FIXED COSTS[5]				VARIABLE COSTS						INCOME			
		Rent	Deprec.	Int.	Ins. & Taxes	Total	Labor	Lights and Power	Water[1]	Paper[1]	Misc.	Total	Total of Fixed and Variable Costs	Income per locker Rented	Undistributed Income per Rented Locker
I—Over 250 Lockers Rented															
Plant No. 2[2]	349	$	$2.44	$2.05	$ .94	$ 5.43	$ 4.42	$1.32	$	$1.29	$1.76	$ 8.79	$14.22	$13.80	$ .42
6[2]	350	.86	1.12	1.12	.98	4.08	10.17	1.82			1.72	13.71	17.79	19.81	2.03
7[2]	400		1.14	1.54	.94	3.62	8.02	1.48	.24	.94	2.39	13.07	16.69	19.24	2.51
16[4]	414	.97	3.38	2.03	.32	6.70	4.42	1.62	.12	1.09	1.97	9.22	15.92	22.52	6.60
17[4]	292		3.17	2.16	1.00	6.33	8.42	1.64			4.70	14.76	21.09	28.42	7.33
Average	**361**	**.37**	**2.25**	**1.78**	**.84**	**5.24**	**7.09**	**1.58**	**.18**	**1.11**	**2.51**	**11.91**	**17.14**	**20.76**	**3.62**
II—151-250 Lockers															
Plant No. 1[4]	250		1.97	1.06	.50	3.53	6.39	2.10		.60	.20	9.29	18.82	18.82	6.00
11[4]	200	1.20	3.35	2.01	.67	7.23	5.45	2.40	.17	.60	1.30	9.92	17.15	17.77	.61
18[4]	194	.52	2.74	1.65	1.32	6.23	6.19	2.01			1.89	10.09	16.32	18.86	2.55
Average	**215**	**.57**	**2.69**	**1.57**	**.83**	**5.66**	**6.01**	**2.17**	**.17**	**.60**	**1.13**	**9.77**	**15.43**	**18.48**	**3.05**
III—Plants With 150 Lockers or Less															
Plant No. 3[3]	104		3.65	2.48	.87	7.00	4.33	2.12		.61		7.06	14.06	14.79	.73
5[4]	102		4.90	2.94	1.50	9.34	7.65	1.30		1.25	2.71	12.91	22.25	20.06	—2.19
9[4]	105		4.57	3.60	.92	9.09	11.43	2.38			1.05	14.86	23.95	18.24	—5.71
10[3]	130		3.85	2.77	1.28	7.90	3.18	2.87	.29	.68	.03	7.05	14.95	16.20	1.25
12[4]	100		6.09	3.71	.68	10.48	6.50	4.72		.47	1.40	13.09	23.57	17.06	—6.51
14[3]	42	1.43	5.83	2.90	1.79	11.95	3.57	3.21		.60		7.38	19.33	13.81	—5.52
15[4]	93		4.73	3.16	1.46	9.35	3.23	3.15		.38		6.76	16.11	18.62	2.51
Average	**97**	**.20**	**4.80**	**3.08**	**1.21**	**9.30**	**5.70**	**2.82**	**.29**	**.67**	**.74**	**9.87**	**19.17**	**16.97**	**—2.20**
Average of All						**7.21**						**10.53**	**17.75**	**18.53**	**+ .78**

1. Average for actual number reporting items.
2. Plants 2, 6 and 7 are cooperatives and include in their wages a payment to management. In this respect they differ from oher plants.
3. Undistributed income is a return to operator's labor and management.
4. Undistributed income is a return to management.
5. In some cases these costs were necessarily set at arbitrary figures because of an associated business over which total fixed costs were distrbuted.

Appendix Table 5. Margin Gained Per Head and Per 100 Pounds Live Weight on Various Grades of Animals Killed by Patrons of 13 South Dakota Locker Plants, May-June, 1941

Species and Grade	No. of Animals	Total Live Wt.	Total Carcass Wt.	Ave. Live Price	Ave. Wholesale Carcass Price	Ave. Live Wt.	Ave. Carcass Wt.	Percent Carcass Wt. is of Live Wt.	Ave. Live Value	Ave. Wholesale Carcass Value	Ave. Value of Offal per Head	Carcass Value + Offal Value — Killing Cost	Net Margin of Carcass Value over Animal Value	Margin per 100# Live Wt.	Percent Margin is of Live Price
BEEF															
Steers: Good	19	14,130	8,295	$9.50	$17.85	744	437	58.7	$70.65	$77.93	$4.93	$80.86	$10.21	$1.38	14.5
Medium	7	4,025	2,260	8.00	16.25	575	323	56.2	46.00	52.46	4.07	54.53	8.53	1.50	18.8
Poor	2	915	515	7.50	15.50	457	257	56.2	34.30	39.91	4.17	42.08	7.78	1.70	22.7
Heifers: Good	26	17.702	9,856	9.25	17.05	681	379	55.7	62.97	64.62	5.77	68.39	5.42	.80	8.6
Medium	5	2,175	1,167	7.75	15.50	435	233	53.6	33.72	36.11	3.92	38.03	4.31	.99	12.8
Cows: Good	2	1,750	927	7.50	15.50	875	463	52.9	65.62	71.76	5.50	75.26	9.64	1.10	14.7
Bulls: Good	2	690	376	9.00	17.00	345	188	54.5	31.05	31.96	2.50	32.46	1.41	.40	4.4
Medium	3	1,800	974	7.30	16.50	600	327	54.1	43.80	53.56	4.58	56.14	12.34	2.06	28.2
Poor	1	400	211	6.00	11.00	400	211	52.7	24.00	23.21	2.50	23.71	—.29	—.07	—11.6
Veal: Good	1	100	58	11.00	19.50	100	58	58.0	11.00	11.31	1.25	10.56	—.44	—.44	—4.0
Medium	3	735	384	10.00	16.00	245	128	52.2	24.50	20.48	3.00	21.48	—3.20	—1.31	—13.1
PORK															
Butcher															
Good	114	29,443	22,130	9.53	14.90	258	194	75.2	24.61	28.92	.80	28.22	3.61	1.40	14.7
Medium	9	2,415	1,772	8.81	14.20	268	197	73.4	23.64	27.96	.75	27.21	3.57	1.33	15.1
Poor	2	570	408	8.00	13.00	285	204	71.6	22.80	26.52	.67	25.69	2.89	1.00	12.5
Sow: Good	85	26,925	19,573	9.39	15.75	317	230	72.5	29.74	36.27	1.11	35.88	6.14	1.94	20.7
Medium	12	4,105	2,951	8.83	14.50	342	246	71.9	30.20	35.66	1.12	35.28	5.08	1.49	16.9
Poor	10	3,314	2,350	8.48	13.80	331	235	71.0	28.10	32.43	1.03	31.96	3.89	1.18	13.9
Stag: Good	3	1,235	810	8.67	14.00	412	270	65.5	35.69	37.80	1.35	37.65	1.96	.48	5.5
Medium	3	1,295	825	7.83	12.50	432	275	63.7	33.80	34.37	1.35	34.22	.42	.10	1.3
Poor	1	260	162	6.00	10.50	260	162	62.3	15.60	17.01	1.00	16.51	.91	.35	5.8
LAMB															
Good	6	633	350	9.40	18.35	105	58	55.2	9.92	10.70	1.15	10.85	.87	.83	8.9
Medium	1	90	45	9.00	15.00	90	45	50.0	8.10	6.75	.90	6.65	5.30	—1.45	—17.9

1. Killing costs per head: Beef—$2.00; Hogs—$1.50; Lambs—$1.00

Appendix Table 6. Quantity and Cost of Paper Per 100 Lbs. of Meat Wrapped —10 Plants South Dakota 1940.

Plant	Total Lbs. of Paper Used	Total Lbs. of Meat Wrapped	Total[1] Cost of Paper	Paper per 100# Meat Wrapped Pounds	Costs
1	15,000	107,273	$150.00	1.4	$ .14
2	45,000	165,500	450.00	1.4	.27
5	12,760	49,592	127.60	2.6	.26
7	37,689	220,000	376.89	1.7	.17
10	8,840	74,633	88.40	1.2	.12
11	12,000	120,000	120.00	1.0	.10
12	4,700	36,152	47.00	1.3	.13
15	3,500	43,000	35.00	.8	.08
16	45,260	252,828	452.60	1.8	.18
18	23,810	80,900	238.10	2.9	.29
Total	**208,559**	**1,149,878**	**2,085.59**		
Average	**20,856**	**114,988**	**208.56**	**1.74**	**.174**

1. Figuring average cost at 10c per lb.